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VETERINARY MEDICINE

OCTOBER 1936

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D. M. Campbell, Editor A. T. Kinsley, Associate Editor
H. J. Mostyn, 1265 Broadway, New York, Eastern Representative

Seventy-Third Annual Meeting of the A. V. M. A.

Place: Columbus, Ohio.

Date: August 11, 12, 13, 14, 1936.

Attendance: 1,841 from 46 states, four provinces, two foreign countries and one insular possession. A record for the A. V. M. A.

Weather: Warm.

Arrangements: As to entertainment features, splendid; as to hotel accommodations, a disappointment.

Banquet: Largest in history of A. V. M. A.; a sweltering atmosphere and poor food, but a lecture that made up for all faults and left everyone more than satisfied.

Program: Good, notwithstanding it contained but little that is new.

Clinic: Marvelous.

Interest: Poor, chiefly owing to the uncomfortable hotel accommodations.

New President: Col. Robt. J. Foster, U. S. Army.

President Elect: Dean Oscar V. Brumley, College of Veterinary Medicine, Ohio State University.

Next Meeting: Omaha.

The number registered at Columbus, 1,841, set an all-time record for attendance at an A. V. M. A. meeting; exceeding by about 400 the number registered at Kansas City in 1931, by 450 the Chicago attendance in 1933, and was more than twice the number (904) registered at Oklahoma City last year. Of those registered approximately 1100 were veterinarians and 740 wives and children of veterinarians or other visitors not veterinarians.

The contrast of the headquarters hotel with the comfortable quarters at Chicago, New York and Oklahoma City should be borne in mind in selecting locations for future meetings. The weather during the meeting was about normal for Columbus, always comfortable outside, but it was oppressive in the hotel. No one suffered unduly, but the discomfort detracted from the success of the meeting. Had the meeting coincided with a really hot spell, such as prevailed in Columbus a fortnight earlier, the meeting would have been ruined. This is 1936; air conditioned hotels are available in most cities, and should be selected for our headquarters. It is true, the dining room of the headquarters hotel in Columbus was allegedly air conditioned, but the effect was but slightly noticeable in the afternoons when it was most needed. Comfortable hotel quarters add not only to the comfort and enjoyment of those in at-

tendance, but to the educational value of the meeting as well.

The meeting was attended by 10 former presidents—Ferguson, Kinsley, MacKellar, Merillat, Cotton, Hilty, Sigler, Williams (N. F.), Marshall and Fitch. Seven living former presidents were absent—Williams (W. L.) Butler, Glover, Mohler, White, Hall and Dykstra. Three former presidents had died since the last meeting—Stange, Munce and Welch.

The opening paragraph of the report in

**Joseph Charles Flynn,
Kansas City Practitioner,
President A.V.M.A.,
1935-36.**

this magazine of the 72nd annual meeting of the A. V. M. A., stated:

"An old Spanish proverb says: 'He who would bring home the wealth of the Indies, must carry the wealth of the Indies with him.' Applied to the A. V. M. A. meetings, this probably implies that he who would profit much from a scientific program must be prepared for it, must be aware of what is doing in his profession, must be scientifically up to date. Our programs are highly technical. The moral seems, be familiar with the current literature of the profession; be a reader of veterinary periodicals."

It is worth repeating. With the passing of years, it becomes more than ever evident that no one can keep in stride with the march of veterinary science by yearly or semi-annual attendance at veterinary meetings. Keeping up in veterinary medicine is a whole-time job.

The meeting was not called to order on the first day till more than an hour after the time set. The assembly room was filled to capacity for the opening meeting. The welcoming address was long but well received.

Address of Welcome

The address of welcome was made by the Hon. Earl H. Hanefeld, Director, Department of Agriculture, Columbus, Ohio. Mr. Hanefeld said of the A. V. M. A.:

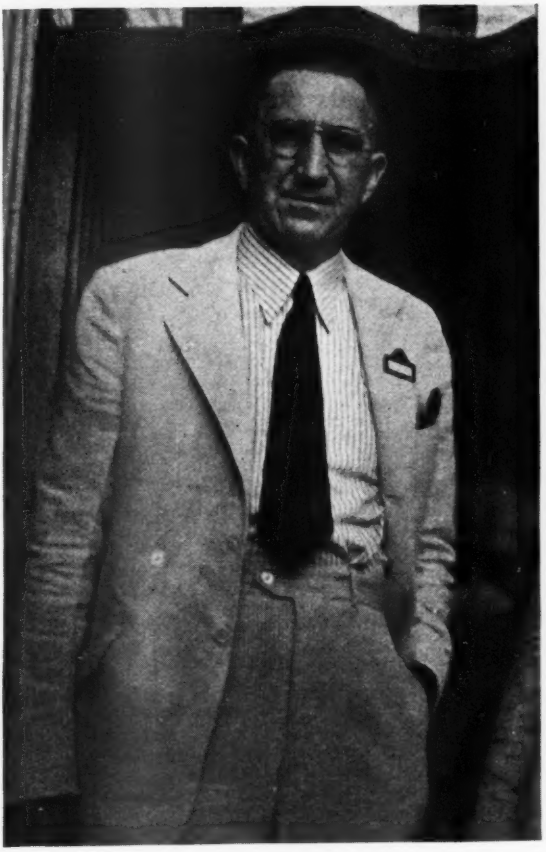
No greater purpose or determination can be found in the set-up of any organization —here we observe a highly organized effort to protect and promote the professional interests of the veterinarian; to elevate the standards of veterinary education; to procure uniform laws and regulations governing veterinary practice; to control and eradicate diseases of animals and poultry; to direct public opinion regarding problems of animal hygiene, and to promote good fellowship in the profession.

As Director of Agriculture, I am in a position to observe and judge the veterinary profession of Ohio and at this point, my friends, let me tell you the results of my findings:

I have observed that the profession—
Obeys its doctrine.
It venerates ideals.
It has programs, policies, and platforms.
It has objectives.
Its ideals are lofty.
Its motives are above reproach.
Its codes are unselfish.
It has no trade secrets.

(Continued on Page 410)

Foster Heads the A.V.M.A.



The new president of the A.V.M.A., Col. Robert Julian Foster, director of the Veterinary Division of the Surgeon Generals' Office, which means head of the Veterinary Corps of the Army, was born at Ithaca, New York, and was graduated from the New York State Veterinary College at Cornell University in 1902. For the next three years he was instructor in veterinary science or bacteriology successively at Clemson College, South Carolina, University of Missouri and the Kansas State College. In 1905 he accepted an appointment as army veterinarian and was assigned to the 12th Cavalry, then stationed at Fort Oglethorpe, Georgia. He served with this regiment at Fort William McKinley, Philippine Islands; Fort Robinson, Nebraska; Fort Meade, South Dakota, and along the Mexican border and with the 9th U. S. Cavalry at Camp Stotsenberg, Philippine Islands, until the World War, when he organized and commanded the Veterinary Section of the Medical Officers Training Camp at Fort Riley, Kansas. In August, 1919, he was ordered to Washington, D. C., for duty as officer in charge of organization and training for the Veterinary Corps in the Surgeon General's Office. In November, 1920, he was transferred to duty as Chief Veterinarian, Army of Occupation, Coblenz, Germany, and served there till June, 1922.

Returning to the United States, he was assigned as Station Veterinarian and officer in charge of Veterinary Instruction at the Cavalry School, Fort Riley, Kansas, where he remained until July, 1926, when he was transferred to the Panama Canal Department until 1929. Colonel Foster was next stationed at Omaha, Nebraska. In 1931 he was transferred to the First Cavalry Division, Fort Bliss, Texas, where he remained till transferred to the Surgeon General's office in May, 1934.

In June, 1909, Colonel Foster and Miss Alice Ewing Johnson of Boonville, Missouri, were married, culmination of a romance that began when Colonel Foster was an instructor and Miss Johnson a student in the University of Missouri.

Colonel Foster became director of the Veterinary Corps of the Army at a trying and a critical time. The rapid reduction in the number of animals posssesed by the army, presaged a reduction in the number of veterinary officers and this move was already being planned. By extending the veterinary inspection of foods and stressing its importance, Colonel Foster, under a new Surgeon General, has reversed the trend and an increase in the size of the Veterinary Corps is now being discussed. Colonel Foster's insistence upon all meat and milk inspection in CCC camps being performed by veterinarians resulted in assigning more than 80 veterinary reserve officers to active duty. For a number of years prior to May 1, 1934, when Colonel Foster became head of the Veterinary Corps the number of veterinary reserve officers had been decreasing. In two years this trend also has been reversed and the Veterinary Reserve increased in size by several hundred.

(Continued from Page 408)

It works in the open and takes the people into its confidence.

Its discoveries are public property.

Its services are for the common good.

These findings clearly and distinctly place the veterinarians in a field to fully qualify as a useful and important profession.

Oscar V. Brumley, Dean, College of Veterinary Medicine, Ohio State University, Columbus President Elect, A.V.M.A.

Almost 800 veterinarians trained and experienced are located in the various counties of Ohio, and from this group the Department of Agriculture through the Division of Animal Industry receives an excellent coöperation. . . .

Ohio ranks at the top in the production of many of the agricultural products.

The dairy cows of our state produce more than $62,000,000 worth of milk, butter and cheese each year.

Ohio holds sixth place in hog production with a ten-year average of 3,200,600 hogs.

A ten-year average of approximately 3,900,000 head of sheep.

Five hundred thousand horses valued at over $59,000,000.

Twenty-one million chickens producing 112,000,000 dozen eggs each year, and over $24,000,000 worth of baby chicks.

During the year 1935 the average yield of corn per acre was 38 bushels, while the average yield for the United States was 27 bushels. Total production last year was 133,980,000 bushels.

The response to the address of welcome was made, in his usual happy manner, by Dr. J. L. Axby, well-known orator from the Banks of the Wabash.

President's Address

The president of the A. V. M. A. has an unequalled opportunity for acquainting himself, so far as it may be accomplished in a single year, with veterinary conditions the country over, from attendance at some 25 meetings at which he is told problems of the particular section in which the meeting is being held and from a very large correspondence.

He is in an excellent position to advise the association concerning modifications in and additions to its program, and most presidents, in their annual addresses, have supplied such advice rather freely. President Flynn aptly described the inertia of the association in acting on this advice, when he said: "A president's address is like a mother-in-law's advice, listened to but seldom followed."

Of education, he said: "The development of a profession runs parallel to the educational system it maintains. Ours can be no exception, for if we are to serve the country well, we can do so only by keeping our colleges abreast with the progress of medicine. In this respect, the veterinary profession has not defaulted, although impressions to the contrary have long prevailed."

Of the grading of veterinary colleges, he said: "There is so much undeveloped veterinary service in this country that can be developed only through the influence of college graduates, that it seems doubtful if the grading of schools should be ruthlessly accomplished until the capacity of the present schools is augmented. At this moment, young men find it difficult to enter the profession because of overtaxed facilities of our colleges. Numerical deficiency is a profession's greatest obstacle, and I say this without discounting the benefits of higher qualifications."

Food inspection is regarded as: "One of

the undeveloped fields of American veterinary medicine. With the exception of the meat inspected by the Federal Bureau of Animal Industry to qualify it for interstate shipment and exportation to foreign countries, classical food inspection is a neglected art in this country."

And again: "Recommended reforms arouse a conflict on the ground that exposing the truth tends to decrease per capita consumption. This is an error. Increased confidence in any product increases consumption." The entire indifference of some parts of the consuming public to the salubrity of the products they buy for their table was strikingly indicated by the following description of an occurrence in a southern city:

"On a small truck or automobile, there comes to the 'curb market,' a load comprising fresh vegetables, both loose and bundles; honey, buttermilk and butter; some forms of cured meat, pies, cakes and fruit; two or three bags of rich soil for flower boxes; three or four puppies; a sack of kittens; a couple of live chickens, and last but not least, a clump of limbs from the woods to fan off the flies during sale hours. I have seen this and worse in many cities. . . . . Some group capable of doing so, should certify to the wholesomeness of our food. Surely no other group is as well qualified to do so as the veterinary profession."

In business matters, President Flynn found the association inefficient. Some years ago, the association had a surplus of more than $30,000. It has been considerably depleted. He finds that the cost of the Executive Board to the association is some $2,000 annually and believes that with the new arrangement of a House of Representatives to handle the business of the association, that a large Executive Board of 13 members is unjustified, and that the Executive Board should be reduced in numbers and all or a major portion of this $2,000 saved annually to the association. He finds the policy of having the treasurer of the association in a city distant from headquarters, prolific of inconvenience and delay in handling association matters and in the past has cost the association thousands of dollars for bonding expense, attorney's fees and because of bank failures.

Not all the papers presented at the meeting can be discussed at this time. Among the more important were the following:

What a National Pure Food and Drug Law Means to the Public

The paper[1] discussed briefly the operations involved in enforcing the Federal Food and Drugs Act.

S. A. Postle, Food and Drug Administration, U. S. Department of Agriculture, Cincinnati, O.

The Administration is composed of a directing office in Washington, together with research laboratories, district offices at New York, Chicago and San Francisco, and regulatory stations and laboratories at 16 important cities throughout the United States. Chemists, bacteriologists, inspectors and many other scientific personnel are employed at these stations. These, together with others, such as doctors and lawyers, are necessary to intelligently consider all phases of food and drug work.

The work of the Administration falls roughly into two classes, domestic and import. The Administration examines and passes or rejects entry to many imported products annually. Last year, 3,500 lots were refused entry. All domestic food and drug products shipped interstate are subject to the requirements of the Act. Last year about 3,000 seizures and prosecu-

[1] By Mr. S. A. Postle, Food and Drug Administration, U. S. Department of Agriculture, Cincinnati, Ohio.

tions involving domestic shipments resulted while enforcing the Act.

In the case of food products first attention is given to those that may be dangerous to health, second to those made partially or wholly from filthy material, and third to economic cheats. Examples of the above are: Examination of fruit and vegetables for excessive spray residues, examination of cream and butter for extraneous filth, microscopic analysis of tomato products for mold and insect fragments, analysis of preserves and jellies, and many others.

Thirty per cent of the time of the Administration is devoted to drug work. Several thousand U. S. P. and N. F. products are examined yearly. This represents a cross section of the output of practically all the manufacturers engaged in this business. Violative products become fewer every year. Many biological products, such as ergot, are examined. Many products are tested for vitamin potency. Large numbers of patent medicines are analyzed with particular attention to their label claims. Many are found with wildly enthusiastic statements as to the benefits the users should expect. Mention was made of products sold for everything from falling hair to diabetes, tuberculosis and cancer. Inability to protect the consumer from misleading advertisements and harmful cosmetics because of failure of the Act to grant such authority was discussed.

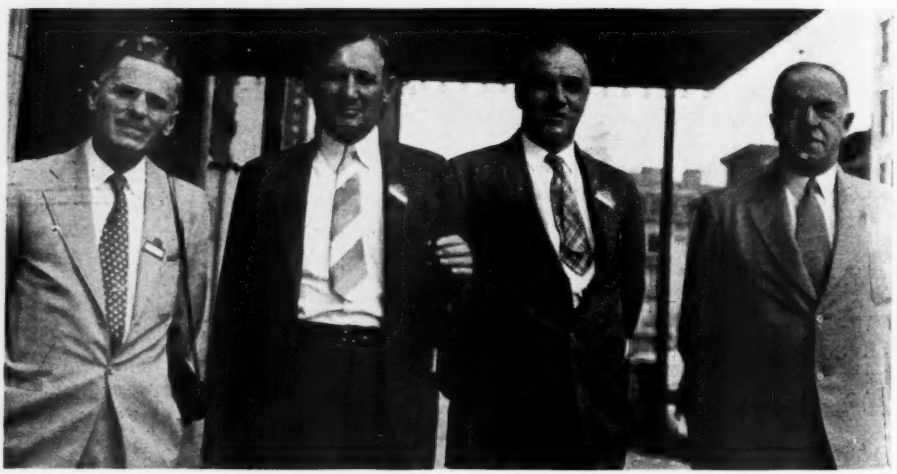
Regulating the Sale and Use of Biological Products Containing Pathogenic Organisms

The Bureau of Animal Industry, Pennsylvania Department of Agriculture, is a regulatory body and as such is charged by law with the prevention, control and eradication of transmissible diseases of animals, including poultry.[2]

In Pennsylvania, the law controlling biological products, approved July 22, 1913, states: "It shall be unlawful for any person to manufacture for sale or sell or offer for sale any biological product intended for diagnostic or therapeutic purposes with animals excepting upon specific permission so to do from the Pennsylvania Bureau of Animal Industry or unless such product is officially endorsed by the Bureau of Animal Industry of the United States."

The virus act, approved April 27, 1909, states: "No person shall inject into or otherwise administer to any domestic animal that is producing or that is to be used

[2] By H. M. Kalodner, Director, Bureau of Animal Industry, Harrisburg, Pa.



E. F. Schroeder, Boston, Angell Memorial Hospital; Clarence C. Hisel, Oklahoma City, State Veterinarian; R. A. McIntosh, Guelph, Ont., Ontario Veterinary College and J. A. Campbell, Practitioner, vice president, A.V.M.A., Toronto.

as food for man any virus or other substance containing pathogenic or disease-producing germs of a kind that is virulent for man or for animals excepting upon specific permission so to do from a member or authorized agent of the Pennsylvania Bureau of Animal Industry."

It is, therefore, apparent that the sale,

H. M. Kalodner, Harrisburg, Pa., Director, Pennsylvania Bureau of Animal Industry and F. R. Beaudette, New Brunswick, N. J., New Jersey Agricultural Experiment Station.

offering for sale and injection into domestic animals of biological products, without written permission from the Bureau of Animal Industry, is contrary to law in Pennsylvania.

Prosecutions have been instituted by the Bureau of Animal Industry for violation of this act and convictions obtained.

The Pennsylvania Bureau of Animal Industry has been confronted with a serious problem in connection with the illegal distribution and sale of poultry biologics, also the establishment of short course schools, the purpose of which is to instruct and educate poultrymen, feed dealers and interested laymen in the diagnosis, treatment and postmortem pathology of transmissible diseases of poultry. This Bureau contends that the veterinarian is the only person professionally equipped to help the poultryman to cope with his disease problems. He alone has received fundamental training in transmissible diseases.

The basic subjects covered in the course of veterinary medicine, such as anatomy, physiology, physical diagnosis, surgery and therapeutics, have better fitted graduates of schools of veterinary medicine to cope with any animal disease problem than anyone else.

The promiscuous sale and unwarranted use of biological products whose therapeutic value is questionable in many cases, have been marked factors in the dissemination of transmissible diseases. This fact becomes more and more apparent by the numerous letters received, especially from poultry owners who have unwittingly been inveigled into having their flocks treated for some real or imaginary disease condition with a biological product of negligible value.

State-Wide Meat Inspection

The author[3] finds this desirable from a public health standpoint and advantageous to both consumers and producers of meat, and also to those engaged in slaughter, meat processing and meat distribution. He regards the veterinarian as the only person qualified for the position of meat inspector, and that special qualifications are required of him.

The veterinary profession is largely indifferent to the importance of meat inspection to veterinarians and to the general public. Where the subject of meat inspection is included at all in the programs of veterinary meetings, it almost always comes at the last end of the program and discussion is slighted. Meat inspection is gradually passing into the hands of laymen.

The consumer should be taught that but two-thirds of the meat he consumes is Federally inspected and due to the fact that inspection makes more difficult the slaughter of questionable animals, the portion that is not inspected becomes a serious hazard to the consumer.

We have in most states today a situation about as follows: A number of cities, towns or counties set out to engage in a meat inspection program. In as much as each unit is separate and distinct from every other, each unit acting upon its own judgement, evolves a system of inspection. Questions of inspection are decided upon, regulations, methods, etc., are established and inspection begins. Whether or not the regulations are adequate is largely the result of chance in many cases. It might be added that printed regulations are far from the measures applied in the daily conduct of inspections. Advice is seldom asked for

[3] By Warren P. S. Hall, Division of Health, Toledo, Ohio.

and then not often followed, it appears. Due to the fact that adjacent territory often has no inspection, it is usually deemed necessary to evolve restrictions. Unfortunately, the restrictions are often brought about by the pressure of those engaged in the industry whose ideas are warped by being impressed with the conception of an opportunity to restrict competition.

If a unit gradually evolves a satisfactory service, it is only through years of effort and after much difficulty that this occurs. In the meantime, however, much dissatisfaction has occurred and past events have the tendency to be brought up somewhat as ghosts that tend to act as inhibiting forces. Too often, however, no progress is made. The work in the packing house being less attractive than other duties included in the program and so meat inspection suffers when other duties press.

Localization of control under the present set up is one of the great hindrances to advancement. Through the establishing of a uniform state wide program under one authority and with one set of standards, the program of inspection can advance rapidly and with it the attendant benefits.

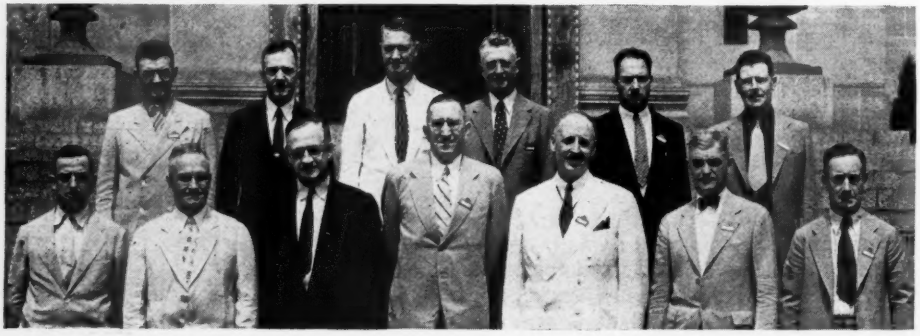
The need for such a program is today very great and unless we veterinarians take action of a definite nature it may soon be too late. It has been the author's observation that we are being displaced in inspection activities. He has noted a reduction of veterinary personnel in certain places with an increase in lay personnel.

The Veterinarian in Milk Inspection

The fact that a healthy dairy cow with a normal udder is necessarily the beginning of all first class milk, is fast becoming recognized by the health departments, the milk industry and the consuming public.[4] As a result of this realization, veterinary inspection with physical examination of dairy cows is becoming more popular and extensive each year.

The modern veterinarian is trained in scientific and technical procedures, and his knowledge of the dairy cow in health and

[4] By J. C. Wickham, Cleveland, Ohio.



Army Veterinarians, 73rd annual meeting of the A.V.M.A., Columbus, Ohio, August 11-14, 1936.

Front row, left to right: Major Allen C. Wight, Fort Benjamin Harrison, Indiana; Lt. Col. Geo. H. Koon, Veterinarian VIII Corps Area, Fort Sam Houston, Texas; Lt. Col. Jean R. Underwood, Commandant, Army Veterinary School, Medical enter, Washington, D. C.; Col. Robert J. Foster, Director Veterinary Division, Surgeon General's Office, Washington, D. C. (President, American Veterinary Medical Association); Lt. Col. Clell B. Perkins, Veterinarian II Corps Area, Governors Island, New York; Major Edward M. Curley, West Point, New York, and Major Chas. M. Cowherd, Fort Hoyle, Maryland.

Back row, left to right: Major Chauncey E. Cook, Fort Meyer, Virginia; Major Forrest L. Holycross, Veterinarian V Corps Area, Fort Hayes, Ohio; Major Jack G. Fuller, Fort Snelling, Minnesota; Major Herbert K. Moore, Army Base, Brooklyn, New York; Major Henry E. Hess, Fort Bragg, North Carolina and Major Oscar C. Schwalm, Fort Bliss, Texas.

Other army veterinary officers in attendance at the meeting were: Col. Burton A. Seeley, Veterinarian IV Corps Area, Atlanta, Georgia; Lt. Col. Jesse D. Derrick, Veterinarian VII Corps Area, Omaha, Nebraska; and Capt. Arvo T. Thompson, Washington, D. C.

disease makes him better qualified for milk inspection than any other professional man.

Many of the food poisonings in the past termed "ptomaine poisoning," are now known to be caused by milk borne bacteria. This fact makes frequent health inspections of milk producing cows of prime importance in the producing of the better grades of milk.

The best and most progressive milk distributors employ veterinarians to make regular health inspections of their producing herds in addition to and in cooperation with the inspection made by their local health departments. As a result of this advancement in quality milk control, milk is better and more wholesome, today, than ever before.

Again, scientific advancement is being made in the laboratory analysis of milk to determine its quality and purity. The microscopic grading of milk is becoming more widely used and is recognized as being the most efficient method.

With this method of laboratory analysis, many abnormal conditions of dairy cows can be detected and the condition remedied immediately.

Quality in milk cannot be determined by a casual examination by the consumer.

Laboratory examinations alone do not improve a milk supply. They merely determine whether or not quality exists. An efficient, well planned and thorough system of quality control must be inaugurated to insure a supply of pure milk and veterinary inspection occupies a very prominent place in such a program.

Preventing Livestock Marketing Losses

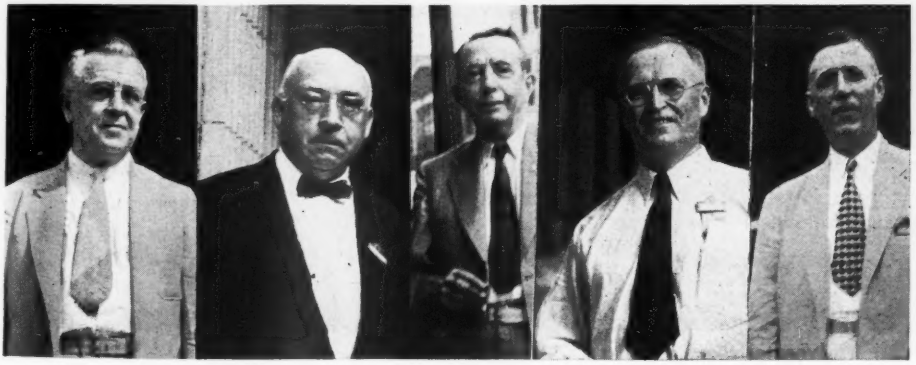
Livestock feeders of America suffer a staggering loss every year in marketing their farm animals, much of it through improper management but often through handling. The loss on the road to market alone has been estimated above $10,000,000 annually.[5]

The National Livestock Loss Prevention Board has conducted exhaustive surveys to find how extensive marketing losses are. Briefly they found last year in the major markets that 21% of the cattle are bruised, with an average loss of 38c a head on all animals marketed. One animal was dead in every 2411; one crippled in every 900; one bruised in every five. Of hogs 20% were bruised with an average loss, packers disclosed, of 7c on every hog marketed. One hog in every 1360 going to market arrived dead; one in 531 crippled; one in five is bruised.

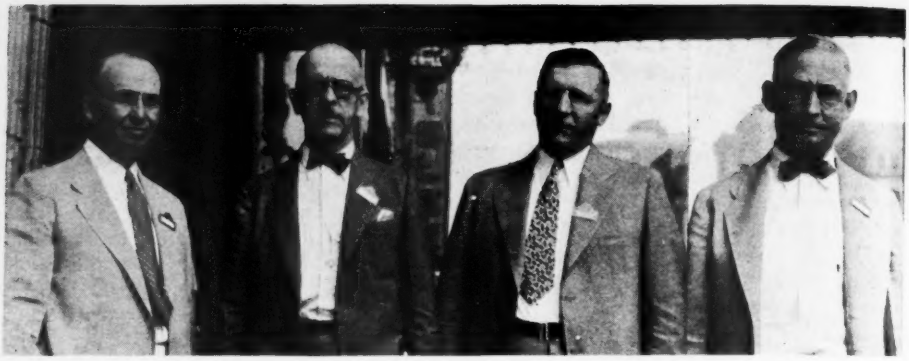
Sheep are not so unfortunate, only 5% being bruised with an average loss on all sheep of 2.3c a head. One in each 918 arrives at market dead; one in 2121 is crippled; one in 20 is bruised.

All this is traced to rough handling of livestock from farm to packer. Each man

[5] By F. G. Ketner, Coöperative Livestock Marketing Ass'n, Columbus, Ohio.



D. I. Skidmore, Washington, D. C., Chief Division Serum Virus Control B.A.I.; Claude H. Case, Practitioner, Akron, O.; E. M. Prather, St. Louis, Milk Inspector; James D. Grossman, Columbus, O., Ohio State University and Carl J. Norden, Lincoln, Nebr., Norden Laboratories.



John P. Hutton, East Lansing, Mich., Division of Veterinary Medicine, Michigan State College; Joab P. Foster, Minneapolis Department of Health; Walter Wisnicky, Madison, Wisc., State Veterinarian and Denny Hammond Udall, Ithaca, N. Y., New York State Veterinary College.

along the way contributes his kick or pounding — farmer, trucker, yardsman. Most of the loss comes with the truck.

Every farmer, trucker, veterinarian or other person interested in livestock ought to take a trip some day through a large packing establishment and see first hand what this loss means—often hundreds of pounds in a day destroyed or deteriorated by bruises, like whip or club marks, cuts from nails or bolts; knocked down hips on cattle; split rear quarters on hogs from slipping on wet floors or ice; backs or legs of sheep bruised from pulling or carrying by the wool; calves with backs peeled from rubbing on the upper deck of a truck; ribs or hind quarters bruised on cattle by others with horns, often hogs or sheep crippled, maybe a leg broken, by being trampled by cattle; or other bruises by poor equipment or rough handling.

The following suggestions were offered as to preventive measures:

Have a loading chute on the farm, with a good pen for herding livestock and loading into truck. Round off posts, as at gates, or put old auto casings on the corners. Have the gates wide enough for cattle. Use a cleated loading chute.

Don't overload and crowd animals.

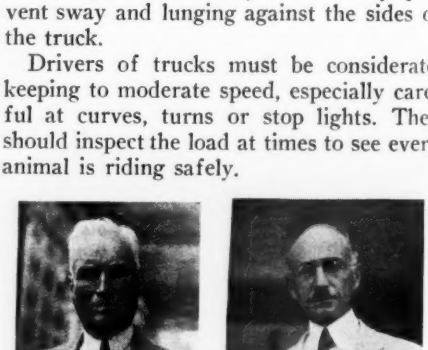
Avoid canes, whips, prod poles, endgate rods, etc., and do not kick hogs. Our association advocates canvas slappers to replace canes and whips. Some yardsmen at Cleveland and Cincinnati we know have an "electric" cane with a hotshot battery carried under the arm, and it is a very effective means to drive cattle or hogs. In the yards a hickory-handled broom with stiff bristles is effective in sorting hogs. Our association has put hundreds of these in various stockyards.

Bedding must be clean. Straw with a few cinders makes a good bedding in a truck. In the truck or railroad car in summer sand is often used. A couple 25-pound cakes of ice in a truck will help a lot to keep hogs cool on hot summer days.

A canvas over the top of the truck keeps the load cooler in summer, and in winter if it covers top and sides it makes the load much warmer.

Partitions in the truck or railroad car are necessary to keep different lots of livestock separate. For a part-load they prevent sway and lunging against the sides of the truck.

Drivers of trucks must be considerate, keeping to moderate speed, especially careful at curves, turns or stop lights. They should inspect the load at times to see every animal is riding safely.



L. Enos Day, Chicago, B.A.I. (Ret'd) and Thomas H. Ferguson, Practitioner, Lake Geneva, Wisc.

Live Stock Loss Prevention

The speaker[6] dwelt at some length with the history of attempts to reduce the loss of live stock in transit to market. The veterinary inspection service established by the western railroads, was the most successful of the organizations undertaking this work, and by an educational program, carried out among both the shippers of live stock and the employes of the carriers, in a period of 14 years, eliminated about two-thirds of the loss in dead animals, in rail shipments. However, the great increase

Warren J. Embree, Columbus, O., New York Central Railroad

in trucking animals to market that has come about of recent years, has created a new and far more difficult problem.

Death loss and bruises and other injuries to live stock in transit are much higher among trucked animals than in rail shipments, due to more frequent application of brakes, sharper and more numerous curves, inadequate loading chutes and overcrowding. The problem of prevention is more difficult than with the railroad due to constant changing personnel among truckers and the irresponsibility of many truck drivers. Since bruises that will result in loss to the packer are not readily discernible in the living animal, market buyers discriminate against trucked animals if they learn they arrived at the market by that means.

[6] By W. J. Embree, New York Central Lines, Columbus, Ohio.

Above: Eddell C. Jones, Grand Island, Nebr., Norden Laboratories. Right: C. H. York, Indianapolis, Fort Dodge Laboratories.

Live Stock Loss Prevention

Veterinarians have contributed in many ways to the reduction of live stock losses.[7] Take the case of blackleg, for example. Thirty years ago, most ranchers could not be sure of raising a crop of calves because of this disease, which has now been brought under complete control. Ten years ago, the loss to packers from tuberculosis aggregated 10 millions of dollars yearly. Now the total condemnations for that disease are less than one-tenth that amount.

There is another type of loss that is a heavy tax on the live stock industry; that is the loss occasioned by handling animals on the way to market. The loss from bruises alone aggregate some 10 to 12 millions of dollars annually.

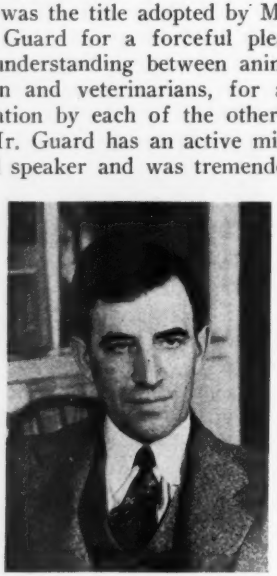
There has been a large increase in the loss of animals in transit due to the common practice of trucking such animals. There is a lack of standardization of trucks. Many of the bodies are not adapted to live stock transportation. Irresponsible drivers by the thousands go into the business of trucking animals. The greatest loss among this class probably comes from overcrowding and lack of partitions. It is common to see horses, cattle, sheep and calves all loaded in the same truck. The speaker could see little prospect of reducing this loss except to place the trucking business under legal control.

The crop failure in the west has resulted in the marketing of a great number of breeding animals, which will be reflected in smaller numbers to be marketed in the future. Nebraska has less than 5% of corn crop; Kansas about the same, and the Dakotas even less. Iowa has less than 50% of a corn crop.

[7] By W. T. Spencer, Live Stock Commissioner, Omaha, Neb.

The Bridge of Good Will

This was the title adopted by Mr. Samuel R. Guard for a forceful plea for a better understanding between animal husbandmen and veterinarians, for a better appreciation by each of the other's problems. Mr. Guard has an active mind, is a forceful speaker and was tremendously in



Samuel R. Guard, Spencer, Ind., Editor, Breeder's Gazette.

earnest. His address was well received. His castigation of Frank Graham and the Graham Scientific Breeding School of Kansas City was enjoyed. His criticism of *Hoard's Dairyman* and other live stock papers, for carrying the misleading, false and fraudulent advertising of this concern, was approved.

He described amusingly the mumbo-jumbo with which Graham gives his "instruction" which in five days is guaranteed to qualify any one "who can read his own writing and hear," to so handle his herd as to have a normal healthy calf annually from each cow. "By this plan there are no barren cows." Graham charges $50 per student for the five days' instruction and claims to have enrolled 10,000. The speaker regarded filching half a million dollars in this way from the hard-pressed owners of live stock as a dastardly thing, and that live stock journals that have made this huge fraud possible by carrying Graham's advertising are equally blamable.

The speaker deplored the many charlatans, deceivers, herb-doctors and cheaters that infest the field of legitimate veterinary medicine and pledged his help in cleaning out, with pitchforks, "the filthy accumulation of the last 30 years." He invited a comparison of the advertising pages of the *Breeder's Gazette* with those of the same magazine years ago and expressed chagrin and surprise that reputable farm papers would still defraud their readers by carrying such advertisements as that of Dr. David Robert's soda, sugar, starch and yeast capsules for the cure and prevention of infectious abortion in cows.

Mr. Guard is well known among veterinarians and he knows veterinarians well. At one time he was on the faculty of a veterinary college, but he doesn't understand veterinary problems. His plan for remedying all the ills of the situation and for building his "bridge of good will" centered in providing more free veterinary service for the stockman and more veterinary instruction for him too. He would have extension veterinarians in every county and Graham's breeding school replaced by really scientific breeder's short courses at every agricultural college where the breeder might be taught free. The good will of the stockman is to be nurtured by supplying him veterinary service at public expense and instruction without paying the $50 tuition, that Graham charges. He is for non-profit endowed veterinary institutes to make authoritative pronouncements.

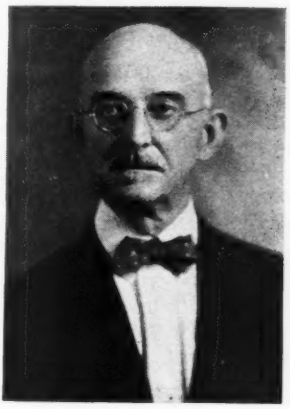
"What we need is an official will up top here to do the job. It would be my idea that the committee on live stock health, or committee on stock-farmer relationships, or committee on breeding schools, or American Veterinary Institute, or whatever you want to call it, in addition to giving out sound advice on sanitation and the maintenance of animal health, should serve also as the Public Relations Department of the veterinary profession."

Basically, the things Sam finds wrong are due to the low regard in which veterinary medicine is held by the live stock owning public, and that low regard is the result of cheapening veterinary medicine in the opinion of live stock owners by the

very public agencies Mr. Guard would increase. The farmer has been deluged with a thousand official bulletins purporting to tell him precisely how to handle anthrax, tuberculosis, abortion, hog cholera and every important indigenous disease of animals, including poultry, in this country. How could he regard these matters as other than simple things if he could learn all about them in an hour's reading. He has been confronted in most of his farm press by "veterinary columns" in which no manner of veterinary problem is too difficult for exparte solution in a single paragraph, and in which veterinary surgery is made as plain as A B C. In the advertising pages of these same papers he has been offered the matériel required for carrying out the directions given him in the "veterinary column" and assured of success if he uses it. At most of the gatherings of farmers he finds a county agent who will give him, in one minute, the answer to a veterinary question that the most experienced veterinary practitioner, right on the ground, might ponder for a week. That under such circumstances the farmer should hold veterinary science cheap, requiring for its mastery no particular training, skill or education is inevitable. Sam sees what is wrong, but he hasn't even suspected the cause.

The General Practitioner[7a]

The general practitioner must be versatile; he is consulted on every veterinary and near veterinary problem from sterility in a bull to obstetrics in a cat; from the feeding of sheep to major surgery in the horse; from cosmetic operations in show animals to reducing fractures in a canary; from keeping mice out of hay to keeping lice off hens, etc. He is the head and all helpers in the greatest of veterinary laboratories—the field of general practice. He is not only the backbone of the veterinary



T. A. Sigler, Practitioner, Greencastle, Ind.

[7a] By T. A. Sigler, Greencastle, Ind.

W. T. Hufnall, Practitioner, Houston, Texas; James M. Bryan, Birmingham, Ala.; Hugh Max O'Rear, Washington, D. C., TB Eradication Division, B.A.I. and Earl E. Wegner, Pullman, Wash., Dean, College of Veterinary Medicine, State College of Washington.

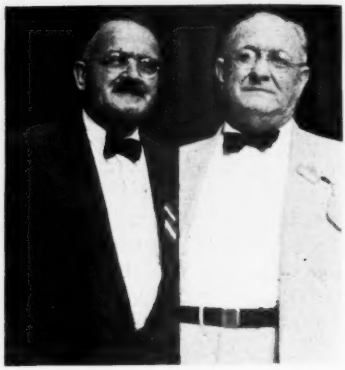
profession, but the source and support of all its ramifications. Without him, all other branches of the profession would be rendered useless; there would be none to carry out their measures, or apply their discoveries, or use their production, and soon, few to teach.

The general practitioner's responsibilities are onerous. He must observe, read and study continuously. He must keep abreast of every advance in veterinary medicine. He must employ every refinement of sanitation, asepsis and anesthesia that his sphere permits and not just what will do. He must maintain his interest. When interest lags, progress stops, and the practitioner is lost. He must keep out of ruts and he cannot trust to luck.

The general practitioner must not only act the part of a professional man, he must look the part as well, in his dress, his equipment, his office and his deportment. Nothing else has so enhanced the small animal practitioner in the estimation of the public as the fine facilities they have provided for their work, and the greatest is the modern sanitation enforced in hospital wards and operating rooms, and next to these is the general employment of anesthetics. The general practitioner has even greater incentive to the use of anesthetics for in addition to the advantage to the patient and approbation of the owner, anesthetics in large animal practice reduce the hazards to the practitioner, which are considerable.

The general practitioner must afford his community a complete service; he must cultivate the whole field of veterinary service, not only because to do so will increase his income, which is never too high, but to forestall intruders. Unqualified invaders who begin by rendering a veterinary service the practitioner neglects, evades or refuses, will extend their activities into other fields to his financial and professional detriment. Doing the whole job is simply self-preservation but many have failed to realize it until it was too late, if then.

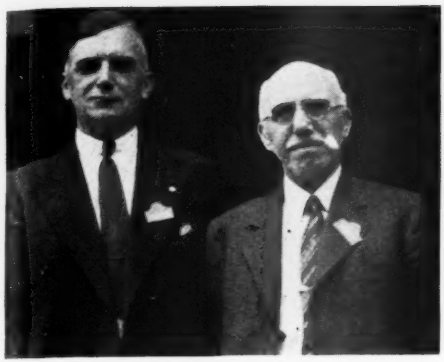
The general practitioner's responsibility to public health is not a light one. More



T. J. Foster, Practitioner, Monticello, Ill., and L. A. Merillat, Chicago, H-G Laboratories.

than 60 diseases and parasitisms are communicable from animals to man and it is his moral duty to see, insofar as he can prevent it, that none of them spread from his patients to man. It is a civic duty as well. He must know much of the diseases of wild life since many harmful bacteria and parasites spread from wild to domestic animals. Civilized man cannot live without his domestic animals and to the veterinarian falls the high duty of conserving these indispensable animals and preserving civilization itself. He is interfered with from all sides, but he must fight on to win, and he can win.

Leonard W. Goss, Columbus, O., Ohio State University and B. H. Edgington, Reynoldsburg, O. Ohio Agricultural Experiment Station.



B. J. Killham, East Lansing, Mich., Extension Veterinarian and Charles D. McGilvray, Guelph, Ont., Principal, Ontario Veterinary College.

Pyelonephritis of Cattle and Horses

Pyelonephritis has long been known to European veterinarians, but its presence in the United States was not reported until 1918 at which time it was regarded more or less as a curiosity.[8] The disease in the adult cow is now so common that, from an economic standpoint, it is regarded as highly important. The senior author encountered this disease in a mare for the first time in 1929. Since that time he has studied the disease in seven mares and one stallion.

The affection in the mare presents the same general clinical characteristics as are observed in the cow. Bacteriologic and chemical studies of the urine show a great similarity also. The main marked differential pathology consists of an accumulation of calcareous material in the exudate covering the mucous membrane of the bladder in the mare.

Corynebacteria have been isolated from the urine of all eight cases of pyelonephritis observed in horses. These organisms have been a characteristic feature of the disease and answer the description of *Corynebacterium renale* as observed in pyelonephritis of cattle. These bacteria were constantly present and could be demonstrated in stained smears of urine. In many cases they were present in such large numbers it was not necessary to concentrate the sediment in order to demonstrate them.

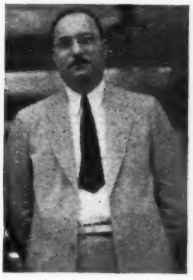
[8] By W. L. Boyd and Lucille M. Bishop, University of Minnesota, St. Paul, Minn. (Halftone on Page IX.)

Studies of smears of the urine of cattle with pyelonephritis have demonstrated from time to time the presence of streptococci, and streptobacilli, as well as Corynebacteria. These additional organisms were a frequent finding in the urine of horses with this disease.

It is difficult to say just what relation the Streptococcus has to the Corynebacteria and also what part it plays, if any, in the production of the disease.

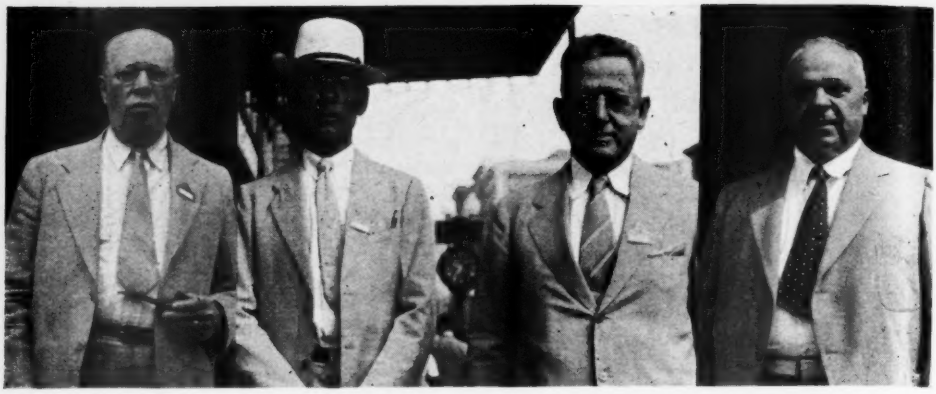
Diagnosis of this disease is dependent upon a chemical and bacteriological examination together with a careful physical examination of the bladder and ureters. The physical examination may be made by way of the rectum in the cow and in well marked cases the extent of the disease can be determined easily. In the mare it is advisable to examine the ureters which is easier to carry out in the mare by way of the vagina.

The breeding of infected cows and mares should be discouraged because of the danger of spreading the infection. In herds where the disease has appeared catheterization of the bladder should be made in all females and the urine examined for the causative Corynebacterium. In a few instances there have been found two or three animals in a herd showing marked symptoms of the disease.



Russell E. Rebrassier, Parasitologist, Columbus, Ohio, and Charles W. Bower, Practitioner, Topeka, Kans.

The senior author has observed spontaneous recovery in one animal, a cow. Treatment, either medical or surgical, so far attempted has proved unsuccessful.



Clifford Penny Fitch, St. Paul, Minn., University of Minnesota; Carl Fauks, Oklahoma City, Inspector In Charge TB Eradication; Ross P. Marstellar, College Station, Tex., Acting Dean, School of Veterinary Medicine, Texas A. & M. College and Arthur F. Schalk, Columbus, O., Ohio State University.

Motion Pictures of Interior of Bovine Rumen

Motion pictures showing the interior of the bovine stomach in normal activity were shown by Dr. A. F. Schalk of Ohio State University. The film represented an 18-months cooperative project of Ohio State University and the Ohio Agricultural Experiment Station, the pictures showed in detail the muscular action and the movement of food in two of the four cavities making up the bovine stomach—the rumen and the reticulum. The rumen includes 80% of the space within the stomach. The motion pictures were taken by Prof. Francis W. Davis, chairman of the university's photography department.

For the purpose of the photography, as well as for an accompanying study of animal nutrition, a gastric fistula or opening was made on the left side of the animal, through the skin, abdominal wall, and into the rumen just beyond.

Five feeder steers, ranging from short yearlings to adults weighing as much as 1300 pounds, were subjects for the research. According to Doctor Schalk, the animals showed no discomfort, carried on normal functions, and went to market in good condition at the close of the tests. Openings were kept closed with specially designed plugs when not in use.

Through special equipment worked out by Professor Davis, interiors of the stomach cavities were illuminated by photoflood light. Photography was carried on under difficulties. Body heat fogged the camera lens frequently. Muscular movements constantly changed the focus. But the finished film, partly in color, clearly showed the movement of food and muscles in the animal's stomach. Waves of semi-liquid foods could be seen rushing through the stomach, in the manner of ocean waves.

The present showing is described as preliminary by Doctor Schalk. The project is not yet completed, and additional movies are being taken.

In the film, food and water are seen entering the stomach from the esophagus, forages and whole grains coming in in the form of boli-masses heavily coated with saliva and mucous.

At other times when the animal is not feeding, saliva is seen to enter the stomach in periodic spurts of a few cubic centimeters each.

Digestion is shown to be a constant process in this section of the stomach, and as the food is washed back and forth boli are seen to break up as they come in contact with the muscular columns. When the material has been reduced to the proper constituency, it passes to other sections of the stomach.

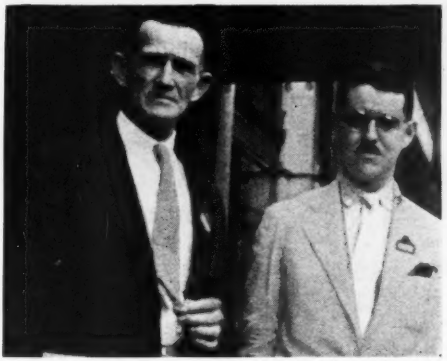
Photography was only one phase of the

investigation, however. Accompanying has been a close observation to show what is happening to the food from the physical and chemical standpoint. Samples were taken from the stomach contents for this purpose. The completed study will eliminate much guesswork in feeding, with consequent benefits to livestock growers and feed manufacturers.

Problems involved in the study have held Doctor Schalk's attention for a long period. One of the first reports of his work in this field was heard at the previous convention of the national association at Columbus, in 1920.

The Significance of Pasteurella Boviseptica Encountered in the Blood of Some Florida Cattle

Samples of heart blood and portions of internal organs of cattle[9] that died on the range and in dairy herds in various sections of Florida have frequently been submitted to the veterinary laboratories of the state experiment station for diagnostic purposes. The usual history accompanying this material showed the animals died in a sporadic manner and exhibited lesions somewhat indicative of hemorrhagic septicemia. From this material organisms were isolated, which upon a detailed study of their cultural, morphologic and biochemic characteristics and their pathogenesis for small test animals, showed they belonged to the pasteurella group. They were identified as *P. boviseptica* and as a result studies were undertaken regarding possible etiological relationship of these organisms to the losses incurred. After isolation by rabbit inoculations, the organisms were grown and maintained on ferric salts agar or meat infusion broth containing ferric ammonium citrate. Exposure of calves, yearlings and cows to cultures of *P. boviseptica* by means of ingestion and by nasal sprays failed to produce septicemia. The organisms were recovered from the nasopharynx of cattle, showing no gross lesions, three months following such exposure. It was found that frequently pasteurella may be demonstrated in the blood and internal organs of cattle shortly after death incident to *Anaplasma marginale* infection and also after death following *Crotalaria spectabilis* poisoning. Pasteurella organisms encountered in these



Isaac S. McAdory, Auburn, Ala., Acting Dean, School of Veterinary Medicine, Alabama Polytechnic Institute, and H. M. "Tom" Sawyer, practitioner, Birmingham, Ala.

investigations were lethal for rabbits in amounts of 0.001cc of a 24-hour salts bouillon culture given intraperitoneally or when a drop of the whole culture was instilled into the nasal passage. These organisms also produced acute and chronic pasteurella infection in the crow, *Corvus ossifragus*, when the organisms were instilled into the

Jesse D. Derrick, Omaha, Lt. Col., V.C., U.S.A. and Moses Jacob, Treasurer A.V.M.A., Knoxville, Tenn., University of Tennessee.

nasal cleft or when the drinking water was contaminated.

Pasteurella, colon-type and other organisms were isolated from the blood stream of cattle showing advanced symptoms of broncho-pneumonia and pulmonary emphysema which developed incident to railway transportation. Umbilical injec-

[9] By D. A. Sanders, Florida Agricultural Experiment Station, Gainesville, Fla.

tions of these organisms produced symptoms and lesions of omphalophlebitis and broncho-pneumonia in suckling calves.

Studies on Bovine Blood * †

Over a period of three months, observations were made on a herd of disease-free Holstein-Friesian cattle to determine the normal range of variation in the sedimentation rate and the percentage volume of erythrocytes.[10] This study has been carried on in connection with a Bang's disease project in which the normal hematology is being determined for a basis of comparison to the hematological variations which may result when these animals are infected with *Brucella abortus*.

The sedimentation rate was determined on 423 blood samples from 22 cows, using Cutler sedimentation tubes. For convenience in presenting the results, the *sedimentation index* has been defined as: the number of millimeters which the erythrocytes have settled at the end of seven hours. The percentage volume determinations were made on the same samples of blood by centrifuging the Cutler tubes at 3200 r.p.m. for 25 minutes.

The mean sedimentation index of the cows ranged from 1.72 to 2.99 millimeters. The mean herd value was 2.394 millimeters with a standard deviation of 0.275 millimeters. The individual means for percentage volume of erythrocytes varied from 28.71 to 37.83%, with a herd mean of 31.32%, and a standard deviation of 2.194%.

Using Fisher's statistical method, *Analysis of Variance*, in interpreting the results of both the sedimentation index and percentage volume determinations, a highly significant difference between individuals as compared to that within individuals was obtained. This result indicates that the variation between individuals is greater than would be expected to occur due to random sampling and experimental error.

Correlation coefficients calculated between the mean sedimentation index and the mean percentage volume of each cow showed some indication of a negative correlation.

It is suggested that the fibrin content of the blood plasma may be an important factor in influencing the sedimentation rate.

Since the sedimentation rate is increased in certain pathological conditions of cattle, application of the sedimentation test and percentage volume determinations may be of practical value as an aid in the diagnosis and prognosis of certain cattle diseases.

Harry William Schoening, Washington, D. C., Chief Pathological Division, B.A.I.; Mark Welsh, College Park, Md., State Veterinarian and Vest Pocket Essayist; William L. Gates, Practitioner, Clarksdale, Miss.; John W. Patton, East Lansing, Mich., Patton Biological Laboratories and W. B. Castleberry, Birmingham, Ala., Muncipal Meat Inspector.

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* Published with the permission of the Director of the Wisconsin Agricultural Experiment Station.

† This study was supported in part by a grant from the Bureau of Animal Industry, U. S. Department of Agriculture.

[10] By L. C. Ferguson, Department of Veterinary Science, University of Wisconsin, Madison, Wis.

The Significance of Suspected Agglutination Reactions for Bang's Disease

A study[11] of certain types of suspects to the agglutination test for Bang's disease has been made at the University of Minnesota. This work was started in 1929 and has continued over the intervening years. The animals used for study were selected from various herds in the state after passing two or more agglutination tests and maintaining a suspected agglutination titer. That is, their blood agglutinated *Brucella abortus* in dilutions of 1:25, 1:50, or 1:100. Suspects, the agglutination reaction of which was due to an ascending titer, were not included in this study.

A study has been completed on 86 such animals. Twenty-three belonged in a group of suspects that had given a series of negative tests before they gave a suspected test and never having, to our knowledge, a positive agglutination titer. Twenty-three animals were former reactors, and during the course of our study had agglutination titers in the suspect or negative range. Another group of 40 suspects were studied, complete agglutination histories of which were not known, and it was not possible to determine to which of the above groups they belonged.

All of these animals have been maintained in the University's experimental herd and nearly all have been kept at least over one calving period. Bacteriological examinations of milk, colostrum, placentas, and vaginal discharges have been made to determine if *Brucella abortus* was present. The possibility of these animals spreading Bang's disease to other animals was further checked by housing with them 21 negative pregnant and nonpregnant heifers.

Three barns have been used in housing the herd, and only small paddocks have been available for outside exercise. Negative controls have been housed in each barn with suspect animals and have been allowed in the same paddock. All animals have been isolated at the time of parturition and not returned to the herd until they were free of any vaginal discharge, and rectal examination indicated normal involution of the uterus. Good stable hygiene has been practiced throughout the experiment. The herd has been bled at monthly intervals and the serum tested by the test tube agglutination test for Bang's disease. Physical examinations have been made of all animals to determine their breeding condition as well as their general health.

If abortions occurred or if calves died shortly after birth, cultures and guinea pig inoculations were made from the aborted fetus in order to determine if the abortion was due to *Brucella abortus*.

Complete autopsies were made of 10 animals and bacteriological examinations were made of lymph glands, uterus, udder, spleen, and liver. These examinations consisted of direct cultures and guinea pig inoculations. In addition, the udder and supramammary lymph glands were obtained for study from one animal, and the uterus was obtained from another animal.

The technique used for direct culture of *Brucella abortus* as well as the guinea pig inoculation method has been very satisfactory for the isolation of *Brucella abortus* from cows with agglutination titers of over 1:100.

Results.—(1) Three individuals from the suspected groups of animals have become positive to the agglutination test during the course of the experiment. Two of them aborted and *Brucella abortus* was isolated from the placenta and colostrum. Two had been previous reactors, that is, with titers above 1:100. The other individual gave a maximum titer of an incomplete at 1:100 approximately one year be-

[11] By C. P. Fitch (Halftone on Page 422), Lucille M. Bishop and W. L. Boyd, University of Minnesota Agricultural Experiment Station, St. Paul, Minn.

Mrs. A. T. Kinsley, Kansas City, who has attended 30 meetings of the A.V.M.A.—all meetings since 1905, except the 1930 meeting in Los Angeles which she was prevented from attending by attendance at the 11th International Veterinary Congress in London. There were approximately 750 wives and children of veterinarians and other visitors at the Columbus meeting. Among these Mrs. Kinsley easily held the record for long attendance.

fore she showed a higher titer and aborted. All three gave definite evidence by the blood test of infection in ample time to be removed from the herd before any of them aborted.

(2) *Brucella abortus* was not isolated by any bacteriological examination made of suspected animals in the herd. None of the control animals have become infected although some of them have developed titers of 1:50 and at times 1:100.

Discussion.—This study has shown that one is able through careful selection and study to arrive at a reasonably accurate diagnosis and disposition of particular individuals showing doubtful reactions to Bang's disease. A definite rule for the disposal of all animals having suspected titers for Bang's disease on a single test is impossible. It is necessary to have the results of a series of tests over a considerable period of time and information on the duration of pregnancy along with an adequate herd history in order that the proper deductions can be made. The results so far obtained show conclusively that most animals having a constant suspected titer for Bang's disease are not dangerous and will not spread Bang infection in an otherwise clean herd. This study is being continued and more information will be available.

The Bang's Disease Suspect

At the expiration of five months, 60.1% of the cattle which had reacted in dilution of 1-50, had become definitely negative to the test, and 23.1% had become definitely positive in dilution of 1-100 or higher to the test, whereas 16.8% remained unchanged in the suspect classification.[12]

It seems, therefore, that practically all animals found to be reactors in dilution of 1-50 on the initial test will definitely become either negative or positive within a period of nine months, and many within a period of five months.

These data may be of use in advising herd owners regarding the disposal of certain animals which react in the 1-50 dilution when the herd test history is available.

[12] By Chas. H. Kitselman, Kansas Agricultural Experiment Station, Manhattan, Kan.

Trichomoniasis or Trichomonad Abortion In Cattle

Venereal trichomonads were discovered in Europe by Mazzanti more than a generation ago; but it is only within the past three years that extensive investigational work has been done and most of the facts concerning this organism and the symptoms that produces it in bulls and cows developed.[13] It was first observed in America by Emmerson in 1932.

Hubert Schmidt, College Station, Tex., Agricultural Experiment Station

So far as is known, the disease is a strictly venereal infection and transmitted from cow to cow and from herd to herd only by bulls at the time of copulation. When a bull is infected there develops in one or two days, an acute inflammation of the prepuce, which may cause swelling and intense reddening. There is more or less profuse muco-purulent discharge from the prepuce and during this period, the bull may be slow to serve, but otherwise shows no systemic symptoms. The preputial mucosa in the acute stage will contain numerous nodules about the size of a millet seed. The acute inflammation soon passes and a chronic stage ensues, of which there are no symptoms manifested externally. Bulls once infected are always dangerous to use, since the infection localizes in some part of the genital tract and remains indefinitely, capable of infecting cows served by such a bull.

[13] By H. Schmidt, Texas Agricultural Experiment Station, College Station, Tex.

D. B. Palmer, Practitioner, Wayzata, Minn., and Robert D. Wall, Practitioner, Des Moines

In the cow, the symptoms of trichomonad infection depends upon the stage of infection in the bull at the time of service. Should the bull be in the acute stage, the cow is very apt to develop in the course of a day or two, an acute form of disease manifested by a muco-purulent discharge from the vulva as a result of an acute vaginitis, swelling of the vulva and uterine catarrh. These conditions usually prevent conception, so that such cows come in heat regularly. If the bull is in the chronic stage of infection, usually no clinical symptoms of disease develop in the cow. The latter, however, may become infected and infection result in pyometra and early abortion.

Treatment of the bull is not considered worth while. In the cow, German veterinarians, in addition to the usual sanitary measures, uniformly recommend the introduction of about 100cc of Lugol's solution into the uterus after it has been flushed with some other fluid. As a rule, only cases developing an endometritis call for prolonged and persistent treatment. The other cases usually recover spontaneously within a few weeks and will then conceive again and calve normally unless reinfected at service.

In a large Texas herd of Jerseys and Holsteins that had been free from Bang's disease for a number of years, six abortions occurred suddenly, followed by another and then two more. At this point the writer was called in and found trichomonads in the fetuses. An examination of the seven bulls in the herd revealed all infected; and a large number of the cows were infected also. The aborting animals continued negative to the agglutination test for Bang's disease.

Anaplasmosis in Cattle

In the classic research of Smith and Kilborne into the nature of Texas fever, they observed and described the *Anaplasma marginale*, but regarded it as one stage in the development of *Piroplasma bigeminum*. We now know that Smith and Kilborne were dealing not with Texas fever alone, but with a mixed infection of piroplasmosis and anaplasmosis.[14]

It was not until 1910 that Theiler, in South Africa, differentiated anaplasmosis from piroplasmosis and named and described the organism causing the former disease.

"Anaplasmosis of cattle is an infectious disease manifesting itself in fever and anemia as a result of a rapid destruction of the red blood corpuscles and degeneration of the large parenchymatous organs. These three cardinal manifestations are responsible for a series of other symptoms that can be observed in varying degrees of intensity in the affected animal and depending upon the degree of multiplication attained by the anaplasmata; such as palor of the mucous membranes, thin, watery blood, frequently a yellow discoloration of the skin and mucosa, depressed appetite, gauntness, weakness, constipation with hard feces, a weak, rapid pulse, rapid respiration, drooling of saliva, and when recovery is taking place, a marked craving to eat dirt. The urine may be highly colored, but shows no tinge of red. The intensity of these symptoms varies markedly in different cases depending entirely upon the degree of multiplication attained by the parasite and thus the number of red blood cells destroyed, the age of the animal affected and the season of the year. Thus, young animals up to about a year old may show only a rise in body temperature which is detected only by the systematic use of the clinical thermometer. Such cases are never observed by the practicing veterinarian because the owner himself would never recognize anything amiss with the animal. Young animals are remarkably resistant to anaplasmosis. The older the affected animal

[14] By H. Schmidt, Texas Agricultural Experiment Station, College Station, Tex.

and the higher the atmospheric temperature, the more marked and numerous will become the symptoms shown by the animal. In adult animals a heavy mortality may be expected, especially if they become infected in summer. Thus, if one wishes to make a distinction in the severity of symptoms exhibited one may speak of mild or severe, or peracute, acute and chronic cases or one may choose any other designation that strikes one's fancy."

In nature anaplasmosis is transmitted by ticks. Nine different species have already been incriminated and perhaps there are others. As is the case with piroplasma, the anaplasma is transmitted through the egg to the second generation of ticks.

Artificially, piroplasmosis may be transmitted by the injection of infected blood. It is also carried by dehorning saws, clippers, etc. The author noted one case in which it was spread by means of dehorning clippers and another by means of a hypodermic needle. In both instances, heavy losses were sustained. In three other recent outbreaks, diagnosed by the author, no transmitting agent could be incriminated.

All cattle are susceptible to anaplasmosis, but there is a wide difference in the severity of the disease, depending mainly upon the age of the animal and in part, upon the season of the year. In animals less than one year, the disease is so mild as to wholly escape the attention of the owner and can be diagnosed only with the greatest difficulty, by the trained observer. In adult cattle, the mortality in summer outbreaks may run as high as 50% or even higher. In cool weather, the severity of the disease is much less.

The anaplasma destroys the blood cells rapidly during the fever period and the red cell count may sink below two million. At this stage the other symptoms, such as loss of appetite, depression, fast, weak pulse, rapid respiration, dribbling saliva, jaundice, weakness and rapid loss of condition becomes manifest.

A microscopic examination of the blood during the fever period will reveal many red cells containing marginal bodies—anaplasmata.

Treatment.—A great many drugs have been recommended for the treatment of anaplasmosis, but no known drug gives uniformly satisfactory results. In the author's opinion, symptomatic treatment should be relied upon for those animals demanding medical care. In this a laxative feed is considered of paramount importance. "It forestalls an early appearance of constipation and thus tends to insure the proper elimination of toxic products from the bowel. For this purpose wheat bran constitutes one-half of the concentrate feed and for roughage only a good quality of pea green alfalfa hay is fed. Green grazing, especially on young green grain fields, is very desirable. Further treatment depends entirely upon the body temperature and the appetite of the animal. As long as the temperature remains below 105°F. loss of appetite is

E. E. Sweebe, North Chicago, Ill., Abbott Laboratories; Frank Breed, Lincoln, Nebr., Norden Laboratories; Herman C. Rinehart, Springfield, Ill., State Veterinarian; G. H. Williams, Omaha, Nebr., Corn States Serum Co. and L. D. Frederick, Chicago, Chief Veterinarian, Swift and Co.

given no consideration and seldom occurs. If the temperature rises above 105°F. and the animal shows depression, a large dose of Epsom salts is given in hot water. This will physic the animal in from eight to 10 hours and usually depresses the temperature by the end of 24 hours by one degree or more and whets the appetite. Should the temperature fail to decline, or if it should even rise and the weather be warm, then the animal is placed in a cool place and wetted down with cool running water for periods of 15 minutes with half hour intervals to control the temperature. Rectal injections of cold water may also be practiced. Every precaution is taken to avoid over-exertion of the animal; strangers and other animals are not allowed to come near it. Occasionally an animal is found which, after having withstood a high body temperature, will continue to refuse all feed even after the body temperature has returned to normal for some days. Continued use of drugs that stimulate the rumen such as nux vomica, barium chloride, tartar emetic or nicotine sulphate usually will have the desired effect, especially if the animal is tempted with fresh green grazing. Sometimes such animal may remain lying down for 10 days or so, although able to get up, but as a rule they are so weak that they remain standing only for a half minute or only long enough to change resting places."

The author does not mention blood transfusion as a treatment for the severely ill animals, although the conditions he describes are those in which blood transfusion is usually highly effective.

Recovered animals remain carriers for a long period, probably permanently, and the disposal of them thus becomes a problem. In the average case, it is probably better to send them to slaughter, since their retention constitutes a hazard to other animals, and makes the territory in which they are kept an infected one.

Young animals can be immunized against anaplasmosis readily, and loss thus prevented, but the author does not recommend it, since it would make carrier animals out of all of them and create a constant menace for susceptible animals on adjoining premises, and eventually give the disease a permanent foot hold in this country.

Sheep Diseases

This was a somewhat unorthodox discussion of this subject. The authors[15] find the great handicap to a profitable sheep industry in Kentucky is a combination of improper sheep husbandry and poor veterinary service.

The greatest fallacy in the management of sheep is the belief, fostered by commercial breeders, packing interests and members of the experiment station staff, that sheep can be used as scavengers; that they will live on weeds and roughage not suitable for other species of domestic animals. This belief, converted into practice, results in a vast amount of malnutrition, which is responsible for heavy loss, and in addition lowers the resistance and increases the susceptibility to parasites and infections, and to this is added in too many instances poor housing and abominable sanitation.

The authors list the causes of loss to the sheep industry of Kentucky in the order of importance, as follows:

Foot rot, septicemias, malnutrition, including pregnancy disease, navel ill, mastitis, plant poisoning, abortion, ictero-hematuria, tetanus and loss from improper medication. Not all of these cause heavy mortality, but all are responsible for economic loss.

Autopsies made at the Experiment Station during the past 30 months, revealed the following causes of death:

Parasites, 25%; pregnancy disease, 20%, pneumonia, 10%; poisoning, 5%, navel ill, 5%; malnutrition, 4%; miscellaneous diseases (14), 19%; undiagnosed, 12%.

For economic reasons, veterinarians are seldom called upon to deal with individual cases of sickness in sheep, and when dealing with herds, veterinarians have too often advised the owner to vaccinate without troubling themselves to make a diagnosis.

[15] By F. E. Hull and W. W. Dimock, Kentucky Experiment Station, University of Kentucky, Lexington, Ky.

Probably more than half the sheep that are vaccinated for hemorrhagic septicemia are sick and dying from other causes.

Sheep specialists going out from state institutions have devoted a great deal of time to treating sheep for stomach worms, docking and castrating lambs. This has been over popularized and many important things essential to successful sheep husbandry have been sadly neglected. Federal and state employes, who have promoted this work, have been ably assisted by the peddlers of commercial live stock remedies and by representatives from the large market centers.

"To talk with the owner about treating his lambs for stomach worms, about their increased value if they are docked and castrated, and about the importance of dipping them, most of which he can do himself, establishes a friendly relation; but to tell the owner that his ewes are half starved, that his barn is filthy and that the reason his lambs are dying or not doing well is the result of improper feeding, poor sanitation, bad udders and just generally bad sheep husbandry, doesn't often lead to the most friendly relations."

The authors are convinced that there is a place for the veterinarian in the control of disease among sheep, provided he is willing to go to the trouble to establish a diagnosis and treat the flock as a whole. There is a large loss from improper medication for stomach worms and improper dipping under the direction of live stock remedy peddlers that veterinarians might well prevent.

Parasites and the popular belief that sheep need not be fed and watered regularly, are predisposing causes of pregnancy disease. The prevention of pregnancy disease depends upon the selection of good, vigorous ewes as breeders, good feeding and the control of parasites, especially of stomach worms.

At least 75 plants grow in Kentucky that are poisonous to sheep. Seven of these plants—spotted hemlock (*Conium maculatum*), wild cherry (*Prunus serotina*), white snakeroot (*Eupatorium urticaefolium*), water hemlock (*Cicuta maculata*), jimson weed (*Datura stramonium*), deadly nightshade (*Solanum nigrum*) and whorled milkweed (*Asclepias verticillata*)—are of major importance. The remainder of these 75 poisonous plants cause trouble in sheep only in rare instances.

Sheep are not apt to eat poisonous plants if other forage is readily available in adequate amount.

Control of Parasites in Sheep

The control of parasites is a major problem in sheep husbandry[16] wherever sheep

J. H. Rietz, Morgantown, W. Va., West Virginia University.

are kept in fenced pastures; nor is sheep raising on the open range entirely free from the handicap of parasites.

There was but little research into the problem of parasite control in sheep till within recent years. The problem has been studied at the West Virginia Experiment Station during the past ten years.

In a single flock purchased by the West Virginia station for experimental purposes, the following parasites were found: Stomach worms. (*Haemonchus contortus*), nodular worms (*Oesophagostomum columbianum* and *O. venulosum*), *Ostertagia, Cooperia, Nematodirus,* hookworms (*Bunostomum trigonocephalum*), whipworms (*Trichuris ovis*), *Chabertia ovina,* tapeworms (*Moniezia expansa* and *M. alba*), lung worms (*Dictyocaulus filaria* and *Syntheto-*

[16] By J. H. Rietz, West Virginia University, Morgantown, W. Va.

coulus rufescens), coccidia (*Eimeria faurei*), tapeworm cysts (*Cysticercus tenuicollis*), and grubs (*Oestrus ovis*).

A total of 162 sheep exclusive of untreated controls were used in the experiment. All treatments were given at 21-day intervals and continued from 15 to 63 weeks. The drugs used were copper sulphate (1% and 1.5% solutions), nicotine sulphate (1.5%) and a mixture of both, tetrachlorethylene, colloidal iodine and calcium polysulphite. The latter was found unsuitable; colloidal iodine ineffective, and tetrachlorethylene ineffective against tapeworms and but partially successful against nematodes. Copper sulphate was 50 to 75% effective against nematodes in 1% solution, and 95 to 98% effective in 1.5% solution, the dose being from one ounce for lambs to three ounces for ewes. Against cestodes, the stronger solution was entirely effective. The copper sulphate and nicotine sulphate solution was equally effective. Nicotine sulphate alone was somewhat less effective and nauseated the animals.

Above: Abner H. Quin, Des Moines, Salesman and right: D. E. Baughman, Fort Dodge, Ia., President, Fort Dodge Laboratories.

The treatment was 20% more effective if the animals were starved 24 hours before treatment, than if they were not starved. It is desirable to dose the sheep regularly every 21 days the year round in the latitude of West Virginia. Feeding powdered copper sulphate in the salt was unsatisfactory. Good feeding was necessary to parasite control in sheep. "Good feeding will not compensate for systematic treatment, nor will systematic treatment compensate for poor feeding. Maximum results in the control of parasites in sheep are reflected in good feeding and management, *plus* systematic treatment."

Lung Worms of Sheep

The routine treatment for lung worms in sheep has been anesthesia with chloroform.[17] Results have been only fair and there has been some loss from pneumonia as a result of the treatment.

Two-hundred-fifty sheep infested with lung worms were given an oily solution of pyrethrum; 3 to 6cc injected directly into the trachea. One treatment was effective in 75% of the flock, 20% required a second treatment and 5% a third. There were no losses from pneumonia or other causes attributable to the treatment.

The Pathogenesis of Ketosis—Pregnancy Disease of Sheep

This paper embodied[18] the recent observations made on the abnormal physiology involved in ketosis and pregnancy disease of sheep made at the North Dakota Agricultural Experiment Station. It was an attempt to find a more adequate experimental explanation of how and why this disease develops. Further confirming evidence was presented to show that it is primarily a carbohydrate problem and that it is not related to the metabolic calcium level. Animals, which are fed on less than a maintenance ration, find it difficult in the latter part of pregnancy to provide for the developing lambs and fulfill their own needs without depleting the glycogen of the liver. A vicious cycle soon develops in which the ewe succumbs from acidosis. This experimental work demonstrated the part which semi-starvation and inadequate feed play in the causation of the disease. The exhaustion of the glycogen and the consequent deposition of fat in the liver of sheep and the subsequent acetonuria were produced experimentally by the simple expedient of fasting and an inadequate ration. The feed and nutritional intake of ewes should be such that their condition improves with advancing pregnancy. A wise system of management should provide abundant exercise.

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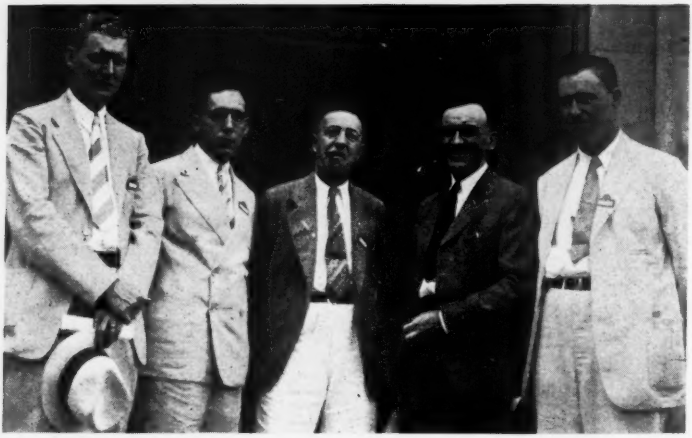
[17] By J. H. Rietz, West Virginia University, Morgantown, W. Va.

[18] By Lee M. Roderick (Halftone on Page 432), G. S. Harshfield and M. C. Hawn, North Dakota Agricultural Experiment Station, Fargo, N. D.



Edwin J. Frick, Manhattan, Kans., Kansas State College; Cecil Elder, Columbia, Mo., University of Missouri; Howard C. H. Kernkamp, Minneapolis, University of Minnesota; Lee M. Roderick, Fargo, N. D., North Dakota State College and J. P. Stout, Philadelphia, Rockefeller Foundation.

Phases of Swine Practice

The common swine surgery the practitioner is called upon to perform includes: Castration in cases of scrotal hernia, of cryptorchids and obstetrics.[19] Baby pig practice includes the treatment of scours, of necrobacillosis, the prevention of anemia, and at eight to ten weeks of age, vaccination against hog cholera. The vaccination of baby pigs is not safe.

Shote practice presents the most difficult problems; cholera, malignant edema, hemorrhagic diarrhea, swine dysentery, infectious enteritis, swine pox, flu and swine erysipelas take their toll in the swine belt, taxing the ingenuity and skill of the veterinarian.

The author finds many farmers still uninformed about cholera, still believing it is caused by feeding new corn and taking unnecessary chances on its spread at threshing and silo filling. Intramuscular injections of serum should be limited to 20cc at a place; intraperitoneal injection is preferable. The site of injection should be disinfected by gasoline and tincture of iodine and the puncture wound closed with collodion.

Scours in pigs is caused by errors in feeding and necrobacillosis by filth. Swine dysentery is a menace on which the research men have given practitioners no help. It is increasing in prevalence and apparently is due to more than one cause.

J. B. Bryant, Practitioner, Mount Vernon, Ia.

In castrating pigs with scrotal hernia, the incision is made directly over the unguinal ring, the pouch is ligated, sutures are not used. Cryptorchids are incised on the belly surface and the testicle located with a finger and spaying hook; one suture closes the incision.

[19] By John B. Bryant, Mount Vernon, Ia.

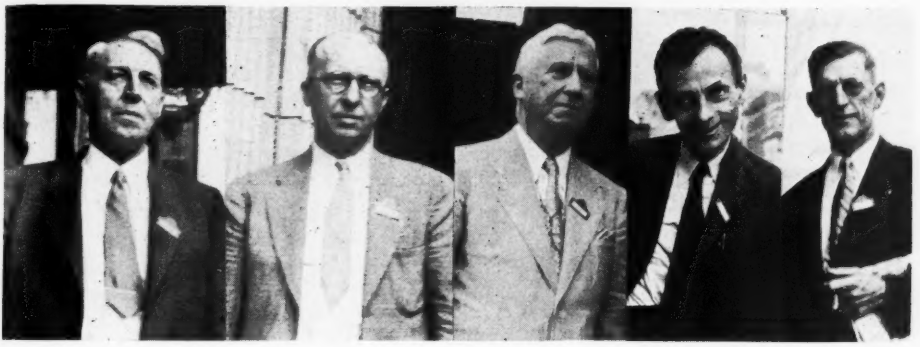
Crystal-Violet Vaccine for the Prevention of Hog Cholera

During the past fifteen years the U. S. Bureau of Animal Industry has been carrying on experimental work with a view to developing a vaccine for the prevention of hog cholera.[20] This has been done in spite of the fact that a successful preventive serum was developed by the bureau some thirty years ago and is now in use in all parts of the world where swine are raised in any number. Unfortunately the serum treatment is somewhat expensive when used on pigs beyond suckling age and also has the drawback that a living virus is used in connection with the serum.

The object in seeking a vaccine was to develop a cheaper and safer method of immunization.

All of the experimental work on vaccines has been carried on at the Field Station of the U. S. Bureau of Animal Industry near Ames, which has become world famous as the place where hog cholera serum was discovered.

After many unsuccessful attempts had been made to develop a vaccine from the blood and tissues of cholera-infected pigs by the use of various chemical agents, an analine dye known as crystal violet was finally tried. Experiments with this dye were begun in November, 1934, and yielded such excellent results that the method was publicly announced in a news release to the press from the United States Department of Agriculture January 20, 1936, and the experimental production of the vaccine, by commercial firms, has been permitted under government supervision.



James H. Burt, Manhattan, Kans., Kansas State College; Walter R. Hobbs, Columbus, O., Ohio State University; C. N. McBryde, Ames, Ia., Field Station B.A.I.; Miller F. Barnes, Lemoyne, Pa., Pennsylvania Bureau of Animal Industry Laboratories and George W. Gillie, Practitioner and Sheriff, Ft. Wayne, Ind.

Sixty-three lots of crystal-violet vaccine have been prepared and tested at the Ames Station on 271 susceptible pigs with the result that rather more than 98% of these pigs were adequately protected against hog cholera. In testing the immunity of these pigs, they were each given an injection of virus of known virulence in a dose many thousand times greater than a minimum fatal dose, which is undoubtedly a far more severe exposure than would ever occur under field conditions. There were no fatalities in this group of pigs following exposure to hog cholera in the manner just mentioned. A few of the pigs showed a slight reaction after receiving the virus injection and quickly returned to normal, while only four showed a more or less severe reaction and all of these recovered in good condition.

Crystal-violet vaccines seem to possess good keeping qualities under cold-storage conditions and have been found to be fully as effective at the end of 14½ months as when freshly prepared.

Experiments indicate that the immunity following the administration of these

[20] By C. N. McBryde, in charge of the Field Station of the U. S. Bureau of Animal Industry at Ames, Ia.

B. T. Simms, Corvallis, Ore., State Agricultural College and Clark H. Hays, Washington, D. C.

Adam A. Husman, Raleigh, N. C., and Ashe Lockhart, Kansas City, Ashe Lockhart, Inc.

vaccines persists for at least six months after treatment. It seems likely that the immunity may persist for a considerably longer period than six months, but further experimentation is needed on this point.

With a view to testing the practical value of crystal-violet vaccines under field conditions, seven farm herds have been treated on farms adjacent to the Experiment Station at Ames. A total of 360 pigs have been treated on these farms. Only one of these experiments has been completed at the present time. In this experiment a farm herd consisting of 40 pigs was treated with crystal-violet vaccine when the pigs weighed from 40 to 90 pounds. Half of this herd was later exposed to hog cholera by the injection of virus after an interval of from four to five and one-half months had elapsed, when the animals weighed from 200 to 250 pounds, and all were found to be immune.

With a view to overcoming certain difficulties which might arise in the commercial preparation of the crystal-violet vaccine, variations or modifications of the original method of making the vaccine are being tried, but sufficient experimental data have not been obtained in regard to these newer methods of preparation to say much about them as yet.

Crystal-violet vaccine must still be regarded as in an experimental stage and much experimental work remains to be done before the true value of these vaccines is established. They have not been put on the market as yet and farmers and hog raisers should still place their dependence on anti-hog-cholera serum. All that can be said at this time is that the experimental results obtained thus far with crystal-violet vaccines have been encouraging.

The Relative Value of Farm Grains in Poultry Nutrition

Sixty to 85% of the more practical poultry rations consist of grain or grain by-products.[21] Because of this importance of grain in the poultry ration, the author undertook various controlled experiments to determine the relative value of the grains commonly used in poultry rations—corn, wheat and oats.

The rations consisted of 1% cod liver oil, 1% salt, 1% steamed bone meal, 1% ground oyster shell, 15% to 25% dried butter milk and the remainder ground yellow corn, ground whole wheat or ground whole oats.

Oats, despite its higher fiber content (9% as compared with 1.75%) made much the best showing in this test. It also developed that 2% of oyster shell and 2% of bone meal in the ration were much to be preferred to 1% of these ingredients.

Rations consisting of large amounts of ground whole oats as the sole source of cereal grain have been found to be quite satisfactory for growth and feathering in chicks. A ration containing 81.5% of ground whole oats, 15% of dried buttermilk, 1.5% ground oyster shell, 1% steamed bone meal, 1% salt and 1% cod liver oil produced good growth and excellent feathering in Single Comb White Leghorn chicks. A ration substituting corn for the oats and with the same amounts of the same supplements, was not satisfactory from the standpoints of growth, feathering or the number of cases of perosis which developed.

[21] By H. L. Wilcke, Agricultural Experiment Station, Iowa State College, Ames, Ia.

Ohio's Poultry Industry

The poultry in Ohio is estimated[22] at close to twenty million birds. It is also interesting to note that the ten largest poultry states, namely: Iowa, Missouri, California, Illinois, Ohio, Pennsylvania, Texas, New York, Kansas and Indiana maintain over 700 million of the 1,380 million chickens estimated in the United States, or slightly more than half.

Chickens on the average farm may not be considered as much of a factor in farm income but in the aggregate in Ohio in 1930 poultry products ranked second, as a source of income, to swine which have usually been considered as "farm mortgage lifters."

Ohio maintains a hatchery industry that ranks first in the United states on the basis of incubator capacity. Statistics obtained in 1934 reveal that Ohio has 831 hatcheries with a total incubator egg capacity of over 27 million eggs. Ohio has 7.29% of the total number of hatcheries in the United States and 9.96% of the total incubator egg capacity.

The incubator egg capacity in individual hatcheries in Ohio ranges from ten thousand to one hatchery with over a half-million incubator egg capacity. Ohio is estimated to produce fifty million chicks annually of which 50% are exported. The majority of Ohio's export chicks are shipped to eastern states. Ohio has a potential annual chick production of over seventy-four million chicks in one season. The chick crop in a normal season has been evaluated at five million dollars. Approximately three million breeding birds are required to furnish eggs for Ohio's hatchery industry.

All phases of the poultry industry have witnessed considerable progress in breeding, feeding, management, disease prevention, etc., however, the control of poultry diseases is probably the most important problem confronting the poultry industry today. Such a condition is probably not unusual due to the fact that many livestock industries have enjoyed progress in production phases but encouraged hazards from the standpoint of disease control. This may be partially explained on the theory that when we concentrate larger number of animals and place them under more artificial conditions for production advantage we create more favorable conditions for the occurrence of disease producing agents, and also there is a possibility of lowering natural resistance of animals, under such conditions, thus rendering them more susceptible to such diseases.

R. Fred Eagle, Chicago, Vice-President, Wilson and Co., originator of "Ideal Dog Food," and Wallace Eagle, Kansas City.

Eggs are a good food and should be used liberally in the daily diet, but my sympathy is with the consumer in the results they obtain. This is largely due to our system of marketing and care for many of the eggs produced, from the time they are laid by the chickens until they reach the consumer's table. Due to the fact that an egg is surrounded by a comparatively hard shell many people believe they will withstand warm temperature without injury to interior quality. This is not true even though the shell may protect the interior from extensive exposure to air it will conduct heat which is conducive to deterioration of the interior quality. Probably the interior of an egg is almost as perishable as milk. It is cheaper to pay a little more for eggs that have been graded and properly refrigerated from the time they leave the hens until purchased. Keep the eggs until they are used in the same place and in the same manner that the fluid milk supply is kept.

[22] By J. T. Burriss, Ohio Department of Agriculture, Reynoldsburg, Ohio.

Poultry Disease Control

In years gone by poultry diseases and problems incident to the poultry industry were given very little consideration.[23] However, during the last fifteen or twenty years much scientific investigation has been done by veterinarians and others interested in kindred branches of science.

The veterinary profession of America might, for convenience of illustration, be classified as practitioners, research workers, teachers in our colleges, federal and state men. The practitioner, state and federal men are the first line of defense, in disease control and treatment, but for this defense the work done by our research is necessary. They supply the ammunition.

While this field is very large, many of the problems are constantly being met and satisfactorily handled. There is no individual or group of individuals other than veterinarians qualified to handle the disease problems confronting the poultry industry. Every effort should be made to have all this important work done by persons specially trained for such work.

The Importance of Endotoxin of Salmonella Aertrycke in the Development of Fowl Paralysis

The intravenous injection of endotoxin of *Salmonella aertrycke* often results in transient but typical symptoms of fowl paralysis.[24]

Birds show a progressive age resistance to the neurotoxic action of endotoxin.

Repeated intravenous injection of endotoxin in chickens results in mild hemocytoblastosis, but repeated intravenous, intracerebral or intraperitoneal injections will not result in fowl paralysis.

Endotoxin in varying amounts *in vitro* inhibits agglution and reduces the titer of *S. aertrycke* immune serum and inhibits phagocytosis.

S. aertrycke alone induced fowl paralysis in 22 of 108 birds, six to 12 weeks of age, while the same number of this causal microörganism plus 1 cc of endotoxin induced fowl paralysis in 53 of 105 birds of the same age.

By the injection of endotoxin into baby chicks it was possible to predict with 86.7% accuracy the development of fowl paralysis when the same birds become eight to 12 weeks of age, and exposed to repeated intravenous injections of *S. aertrycke*.

Fowl Leukosis

The authors[25] consider this the most appropriate designation for that group of leukemic, aleukemic and leukemic-like diseases of fowls at first commonly called range paralysis, but since known by a variety of names, each more or less adequately describing the principal symptoms of some types of the disease.

A wide variety of tissues are affected in the various forms of fowl leukosis and the systems and lesions are even more varied. The extension of the disease is slow and the result practically always death, but the course varies over wide limits, from acute to a chronicity of one or more years.

Fowl leukosis is most commonly differentiated into three types—erythroid, myeloid and lymphoid and may be further differentiated as nerve type, eye type and visceral lymphocytoma, according to the site of the lesion; but these types may merge into one another, or two or more types may be present in the same bird at the same time. The onset of any type may be gradual or sudden, and the course of all types is variable.

A record was given of seven transmission experiments. The results fully confirm previous experiments of others and support the opinion generally held that (1) young birds are more susceptible than older fowl; (2) the disease is caused by a filterable virus and may be transmitted by injection of infected tissue and contact with infected birds or infected premises; (3) fowl leukosis is one of the most important diseases confronting the poultry industry, and (4) the most important methods of control are proper sanitation and the use of breeding stock from resistant sources.

[23] By E. A. Downs, Mt. Sterling, Ohio. Address of the Chairman, Section on Poultry Disease.

[24] By M. W. Emmel, Florida Agricultural Experiment Station, Gainesville, Fla.

[25] By C. D. Lee, H. L. Wilcke, Chas. Murray and E. W. Henderson, Iowa State College, Ames, Ia.

Observations on the Incidence of Fowl Leukosis in Hatching Eggs and Chicks

Fowl leukosis was studied on 14 farms[26] where the disease had not appeared until the spring of 1935. In all cases symptoms first appeared in chicks. In 12 instances the chicks came from three hatcheries; in the other two the chicks were hatched from eggs produced on the farm. One of the latter hen flocks was shown to be infected, but in the other flock the source of the infection was not determined.

The situation on each farm is briefly described below. It should be understood that the mortalities given may be far from accurate. It was necessary to take the owner's word, and other causes might have, and probably did, enter in without his knowledge. Only those farms on which a positive diagnosis of fowl leukosis was made by a competent person are included in this survey.

Farm 1.—One hundred Barred Rock chicks and 400 White Leghorns were purchased. There was a bad outbreak of range paralysis. Three hundred and forty of the White Leghorns were lost before maturity, and approximately 30 more went down with the disease during the first year. None of the Barred Rocks contracted the disease.

Farm 2.—The operator of this farm bought five lots of 100 chicks each from five different hatcheries. A bad outbreak of range paralysis occurred in one of the lots of chicks, and this lot was from the same hatchery the chicks from which suffered most of the outbreaks of the disease in the community last year. In fact, they were from the same hatchery whence the chicks on *Farm 1* were procured.

Farm 3.—Sixty birds were left out of 225 purchased as chicks from a hatchery. Though these chicks were placed on clean ground in a new brooder house, some of them became paralyzed, blind or both at 8 weeks of age. Of the 60 birds that were left, fully half showed clinical symptoms of leukosis.

Farm 4.—One-half of the chicks were lost after leukosis appeared in the flock. Prior to the spring of 1935 the hens on this farm had never exhibited symptoms of leukosis. The chicks were bought from two different hatcheries, one lot being Single Comb White Leghorns and the other Barred Rocks.

Farm 5.—Leukosis appeared for the first time in the chick flock. These chicks came from several different hatcheries.

Farm 6.—About half of a small hen flock was lost. The chicks were farm hatched from the owner's eggs. The only birds introduced into this flock were some brooding hens from a known leukosis-infected flock.

Farm 7.—About half of the 125 hatchery-purchased chicks succumbed. Many of the cases were definitely diagnosed as leukosis, and marked the first appearance of the disease on this farm.

Farm 8.—Had the same experience with chicks purchased from the same hatchery as farm 7, and sustained a somewhat heavier loss.

Farm 9.—Of 100 hatchery chicks about 40 died. They had begun to show symptoms of leukosis at 8 weeks of age.

Farms 10, 11, 12 and 13.—The owners of these farms had purchased chicks in which fowl leukosis developed with losses varying from 10% to 50%. As far as could be determined, these cases represented the first appearance of the disease on these farms.

Farm 14.—An interesting observation was made on this farm. Chicks procured in the spring of 1935 from the same hatchery supplying many of the other chicks, were brooded in the usual manner with a small loss. The hens went through the winter of 1935-36 with an unusually low death rate, and as far as the owner knew were free from disease. However, the chicks hatched from this flock in the spring of 1936 commenced to show symptoms of fowl leukosis at 8 weeks of age, and up to August 4, 1936, 20 of them had succumbed. On the above-mentioned date the hen flock was carefully examined and fowl leukosis definitely diagnosed.

[26] By B. A. Beach, University of Wisconsin, Madison, Wis.

Studies on Certain Filterable Viruses

The investigations reported in this paper[27] were carried out in part in the Department of Bacteriology, Kansas Agricultural Experiment Station, Manhattan, Kan., and in part in the Division of Animal Pathology and Hygiene, University of Illinois, Urbana, Ill.

The funds used in the purchase of the eggs inoculated in the experiments at the University of Illinois were supplied by the Smith Incubator Company, Cleveland, Ohio.

During the past few years, the utilization of the developing avian egg for propagating various filterable viruses has facilitated greatly the study of these important disease agents. Among the viruses attacking domestic fowl which may be cultivated indefinitely by this method are fowl pox and infectious laryngotracheitis.

With the object of making available pure culture virus in quantities sufficient for studies dealing with pathogenesis, pathology and immunity, certain observations and findings relative to the factors concerned with egg propagation as observed in these studies were set forth.

In as much as propagation of the filterable or ultraviruses presumes infection of living cells of the host or host tissue, the factors concerned with this phenomenon considered were, (1) susceptibility of the avian egg to infection by the viruses of fowl pox and of infectious laryngotracheitis and (2) factors influencing the infectivity or virulence of these viruses for developing susceptible eggs.

It has been suggested that a lack of cellular and tissue differentiation accounts for the observed marked susceptibility of the embryo to certain agents (vesicular stomatitis, virus equine encephalomyelitis, herpes) which are innocuous for mature fowl or the young chicken. However, with certain other viruses (foot and mouth, hog cholera) a virtual absolute immunity corresponding to that of the mature fowl apparently is shown by the developing chicken embryo. In the case of infectious laryngotracheitis the developing chicken and turkey egg are readily infected by the virus which is limited to the chicken in its host adaptability among domesticated poultry. Duck, guinea fowl, and pigeon eggs proved refractory thus suggesting that immunity or susceptibility of the developing avian egg is associated at least in part with factors other than simple lack of differentiation or immaturity.

The inoculation of various species of developing eggs incubated 10 to 18 days prior to inoculation with fowl pox virus (strain K 1) showed considerable variation in duck, guinea fowl, turkey and chicken eggs.

Although fowl pox infection was obtained with eggs of all of the species, gross and microscopic variations from the lesions in chicken eggs were encountered. Considered indicative of a higher resistance to this virus than that shown by hen eggs was the greater concentration of virus required to initiate infection in duck eggs. An apparent greater increase in resistance to pox infection in duck eggs after the 15 days of incubation was also interpreted as evidence of lower susceptibility.

For continued chicken egg propagation it was found that eggs incubated for 12 days prior to inoculation were more suitable than 10 or 14 day eggs although variations attributable to several factors were encountered.

In a duplication of egg susceptibility experiments previously reported a strain of virus (J) manifesting differences in egg lesions produced and lower infective potency was employed. This strain would seem to belong to the group exemplified by Burnet's Victorian strains as recently reported and would establish the presence of two groups of laryngotracheitis viruses in this country. Parallel results were obtained with duck, guinea fowl, and turkey eggs in this experiment thus supporting the previous findings.

In utilizing egg inoculation freely the importance of factors such as concentration of virus, continued egg passage and storage on the infective potency were studied.

Abrasive materials such as ground Pyrex

[27] By C. A. Brandly, Division of Animal Pathology and Hygiene, University of Illinois, Urbana, Ill.

glass and quartz sand added to virus containing tissues and exudates to facilitate trituration were found to reduce the activity of the viruses in certain tests and the possible complete inactivation under certain conditions is pointed out. Filterability of virus suspensions was shown to be enhanced through purification by precipitation according to the method of Behrens as well as by egg passage.

The successful continued chicken egg propagation of the two viruses under observation requires adherence to certain requirements. The utilization of early lesion material of high potency is essential to maintain the virulence for eggs and chickens. Laryngotracheitis is more fastidious in its physical and temperature requirements than fowl pox and hence under certain conditions it may undergo a rapid diminution in potency or complete loss of viability.

The importance of proper methods for storage of fowl pox and laryngotracheitis virus propagated in eggs for use in this procedure as well as for vaccination was emphasized in several instances.

Conclusion: A consideration of factors concerned with the egg propagation of fowl pox and infectious laryngotracheitis viruses emphasizes that variations in susceptibility to infection among different species as well as within the species of egg employed may bear considerable significance. Various factors influence the infective potency or virulence of fowl pox and infectious laryngotracheitis viruses insofar as continued egg propagation is concerned and failure to recognize them may complicate the application of the relatively simple technique of developing egg cultivation of the viruses.

Many references to the literature on the subject were cited.

H. Preston Hoskins, Chicago, Secretary-Editor, A.V.M.A.

H. A. Hoopes, Practitioner, La Rue, O.

Cultivation of the Virus of Infectious Bronchitis

The virus of this disease passes all grades of Berkefeld filters, and is regularly infectious when introduced into the respiratory tract.[28] Intra-muscular or subcutaneous inoculations are either non-infectious or produce the disease only after a prolonged period of incubation.

The virus was inoculated into the chorio-allantoic membranes of developing embryos from eight to thirteen days old. In the first seven generations few embryos were dead when the eggs were opened, but from this generation on the majority of embryos were killed by the activity of the virus in from three to six days.

The virus produced none of the lesions provoked by laryngotracheitis virus so that egg propagation serves as a means of differentiating these closely related viruses.

The virus is immunologically distinct from laryngotracheitis as shown by cross immunity experiments. The serum of a recovered bird contains neutralizing bodies.

[28] By F. R. Beaudette (Halftone on page 413), and C. G. Hudson, New Jersey Agricultural Experiment Station, New Brunswick, N. J.

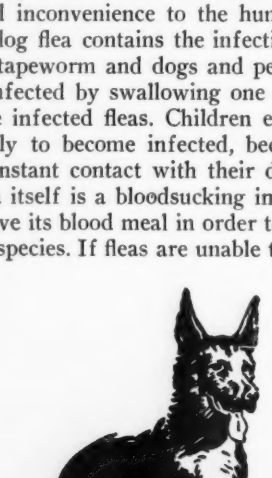
A Consideration of the Tapeworm and Heartworm Problem in the Dog

Parasites are of frequent occurrence and the cause of serious trouble in the dog.[29] Two parasites that are increasing in prevalence in this country are the tapeworm and heart worm, especially the latter.

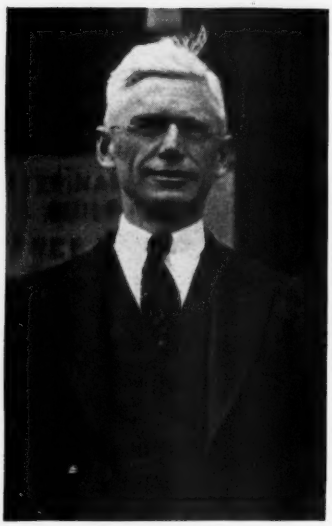
One of the most important things to know, in controlling these animal pests, is their life history. A knowledge of the life cycle of any disease producing organism, enables the application of methods of attack at the weakest point of this cycle. It affords a more scientific approach to the problem and eliminates loss in time, effort and cost.

The life cycle of one of the most common tapeworms occurring in the dog is of concern to the human family, because children may become infected with this tapeworm and also due to the fact that the dog flea, which is the intermediate host of this tapeworm, is the cause of much discomfort and inconvenience to the human.

The dog flea contains the infective stage of this tapeworm and dogs and people are easily infected by swallowing one or more of these infected fleas. Children especially are likely to become infected, because of their constant contact with their dog pets. The flea itself is a bloodsucking insect and must have its blood meal in order to propagate its species. If fleas are unable to obtain



[29] By Russell E. Rebrassier, the Ohio State University, Columbus, Ohio. (Halftone on Page 421.)



Ward Giltner, East Lansing, Dean, Division of Veterinary Medicine, Michigan State College.

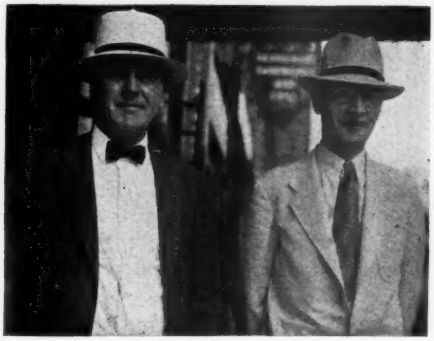
blood from the dog, they will attack the human readily and cause great discomfort, in some instances causing people to leave their homes temporarily.

The heartworm, in the past, has been more or less confined to the warm climates, but in recent years it has been making its way rapidly to the temperate and colder climates. During the past three years it has been making progress in Ohio and is becoming a serious menace to the dog.

The mosquito and the brown dog tick are known to be the intermediate hosts to this parasite and it is through these insects that the heartworm is transmitted from dog to dog. The young forms of the heartworm are called microfilaria and occur in great numbers in the circulating blood stream, while the adult worms are lodged in the heart and adjacent blood vessels. In order to complete their life cycle, these small microfilaria must be taken in by the mosquito or tick and pass a certain period of time within the bodies of these intermediate hosts. They then migrate to the labium of the insect and when it feeds the microfilaria are transmitted into the blood stream of the dog and develop to the adult forms. The mosquito is able to take in about fifteen of these microfilaria in one blood meal.

Diseases of the Prostate Gland in the Dog

Hypertrophy of the prostate gland is common in the dog and not infrequently is the cause of symptoms. It has been the author's[30] observation that diseases of the



Herbert Lothe, Practitioner, Waukesha, Wisc., and Carl F. Schlotthauer, Rochester, Minn., Mayo Foundation.

prostate gland are of great importance as regards the health and longevity of male dogs. The frequent cause of disease of the prostate gland in the dog may be attributable to its functional development and situation.

Bollman and the author recently learned that there is generally a constant relationship between the size of the prostate and the body weight in dogs until they are five years of age. After this age, marked variations in the size of the prostate may be noted. The prostate gland of a young dog may represent 0.1 to 0.7 grams of gland for each kilogram of body weight.

The causes of hypertrophy and other diseases of the prostate gland are not definitely known. It was observed that house-trained dogs are more subject to diseases of the prostate gland than dogs under other environmental conditions. The etiology of this is not known.

The symptoms of disease of the prostate gland vary. In hypertrophy of this organ the symptoms may be those of obstruction of the urinary tract and posterior weakness. If acute or subacute inflammation of the prostate gland is present, constipation, urinary retention, stiffness of gait, arched back, rigid abdomen, fever and depression may be noted.

The condition of the prostate gland can be determined quite readily by rectal palpation of this organ.

The treatment of disease of the prostate gland in the dog is dietary, medical and physical.

[30] By C. F. Schlotthauer, Mayo Foundation, Rochester, Minn.

Streptococcic Infections in Dogs

Streptococcic infections in dogs have received comparatively little attention.[31] Holman studied a number of streptococci, isolated from dogs by Broadhurst, and called one of them *Streptococcus equinus* and the rest of them he named in such a way as to make it appear that the streptococcic flora of dogs is practically the same as that of humans. Judging by the work of Edwards, Landsfield, and Plummer, Holman's methods of differentiation were inadequate. It appears from the work reported by the authors that dogs have their own streptococci and that under given conditions these organisms may be able to do more or less harm. Hemolytic, viridans and nonhemolytic varieties were isolated.

Specimens and organs yielding one or more of the three types of streptococci were: heart, pericardium, blood, lungs, liver, kidneys, peritoneal fluid, intestines, umbilicus, skin abscesses, femorotibial articulation (one case), tonsils, vagina and prepuce. The streptococcus isolated from the prepuce was found to have been picked up from an infected female through coitus. No streptococci could be obtained from the prepuce of this male before mating nor 15 days afterwards.

Many of the specimens examined were pups that had died a few days after birth, the cause of death, supposedly, being "acid milk." On several occasions the same streptococcus as that found in the female genital tract was isolated from such pups. Usually we also obtained *Escherichia coli* and a staphylococcus of the albus type. It is not

[31] By H. J. Stafseth, W. W. Thompson and Lisa Neu, Department of Bacteriology, Michigan State College, East Lansing, Mich.

possible at this time to say whether one of those organisms alone or two or more of them acting synergetically may be the cause of early pup mortality. There is a possibility that there may be other factors involved such as a filterable virus or vitamin deficiency. In one kennel vitamin deficiency could hardly be responsible because vitamins were supplied in, what appeared to be, adequate amounts. There has as yet been insufficient time to search for filterable viruses. Despite these possibilities not having been sufficiently investigated, circumstances seem to incriminate streptococci for a part in the etiology of early pup mortality because they have been found so widely distributed in the dead and moribund pups. Still the fact that no organisms were obtained from many dead pups, in which no clue as to the cause of death could be found, makes it seem advisable to withhold judgment as to the significance of the microbes encountered.

Two varieties of streptococci were isolated from pus from an abscess caused by the injection of rabies vaccine. A sample of the same brand of vaccine failed to yield streptococci. The animal concerned died as a result of pyemia. Since streptococci are rather frequently found in abscesses and wounds of dogs, it behooves the clinician to practice the best possible asepsis in surgical procedures on dogs.

Two cases of arthritis in dogs were treated, apparently successfully, with vaccines, one with a mixed autogenous vaccine containing streptococci, staphylococci and colon bacilli reinforced with filtrates from these organisms; the other with a mixture of a vaccine made from a hemolytic canine streptococcus and a filtrate from the same organism. The fact that these two animals responded in a manner similar to that of several human patients treated with autogenous vaccines for arthritis adds weight to the belief that recovery was due to the treatment applied.

A description of the bacteriological methods employed and also of the lesions observed in pups was included in the discussion.

Observations on Canine Babesiasis (Piroplasmosis)

Piroplasmosis[32] of dogs due to the *Piroplasma canis* (*Babesia canis*) is widely distributed over the world, being especially prevalent in tropical zones, where the acute form of the infection (biliary fever, malignant jaundice) is often reported. In subtropical and temperate regions, canine piroplasmosis is less frequent and usually a chronic infection.

On the lower east coast of Florida, a depleting, malignant disease of dogs, especially of greyhounds, occurs. Affected greyhounds are incapacitated over prolonged periods, during which time their training and coursing activities are interrupted.

The symptoms are vague, manifesting varying degrees of weakness, inappetance, vomiting, anemia, pallor of the mucous membranes, slight icterus of the sclera, intermittent fever, muco-purulent eye discharge, enlargement of the spleen and less often, a cough. These symptoms lead to a tentative diagnosis of canine piroplasmosis, which was confirmed on laboratory study of affected animals made in the Veterinary Department of the Florida Experiment Station at Gainesville.

Postmortem lesions in animals that succumbed to the disease show the internal organs to be icteric; the blood pale and watery; the spleen enlarged and soft; the kidneys congested, and the urinary bladder distended with urine containing blood-colored matter. The liver is enlarged and yellow and the gallbladder distended with dark, thick bile. The intestinal contents are bile-stained, the feces bright yellow. Petechial hemorrhages often occur in the epicardium, endocardium and pleura. Lesions of broncho-pneumonia are also observed.

The brown dog tick (*Rhipicephalus sanguineus*) were usually found on affected animals and is believed to be chiefly responsible for the transmission of the disease among Florida dogs. This tick occurs from Florida to Texas and as far north as Illinois. Elsewhere, the *Ixodes ricinus, Dermacentor andersoni* (*venestus*) and *D. va-*

[32] By D. A. Sanders, Florida Agricultural Experiment Station, Gainesville, Fla.

riabilis have also been incriminated in the transmission of canine piroplasmosis.

Canine piroplasmosis responds readily to treatment. Intravenous injections of 5 to 25cc of a 2% aqueus solution of trypanblue being a specific. In addition to the intravenous injection, it is advisable to give stimulating tonics, especially those capable of building up the hemoglobin content of the depleted blood. Careful nursing, very little exercise and nutritious food hasten the convalescence.

Recovered animals continue to be carriers of the parasite for long periods.

The Utilization of Sheep in Rabies Vaccine Protection Tests

In a previous article it was shown that the use of the intralingual method of administering the infective dose of rabies virus has given consistent results in the protection test of rabies vaccine on rabbits. It was also shown that dogs lend themselves to the intralingual route of administering the infective dose, but did not stand the confinement of the test period from the physical stand point.

Our interest in these experiments has continued with an attempt to establish some usable method for estimating the value of rabies vaccine phenol killed on larger animals.

The experiments[33] reported are the results of our experience using rabbits and sheep as the test animals.

Rabies vaccine phenol killed containing 25% brain and cord tissue emulsion prepared from rabbits, Vaccine (A), and Rabies vaccine phenol killed containing 20% brain and cord tissue emulsion prepared from horses, Vaccine (B), was used on rabbits and sheep.

The test on rabbits showed that Vaccine (A) completely protected rabbits in a single 5cc dose and in multiple doses of 0.5cc daily for 14 days. While Vaccine (B) protected 83% of the rabbits receiving a single 5cc dose, and 100% of rabbits receiving multiple doses of 0.5cc daily for 14 days against an infective dose which killed 100% of the controls.

[33] By J. E. Schneider, Mulford Biological Laboratories Sharp and Dohme, Glenolden, Pa.

Vaccine (B) was further tested on sheep first group of six sheep receiving single 5cc dose protected 83%. Second group of six sheep receiving a 5cc dose of rabies vaccine, on two consecutive days, protected 100%. The third group of sheep receiving a 5cc dose of rabies vaccine for six consecutive days protected 83%, against an infective dose which killed 100% of the controls.

Results on sheep show that the use of the intralingual method is suited for this type of protection test.

In view of our observations, sheep may prove to be the best medium for testing the protective value of rabies vaccine on field animals.

It is our opinion that rabies vaccine injected in a single 5cc dose which protects 66% of the test animals against an infective dose of rabies virus which kills 66% of the controls is a good vaccine and should afford ample protection against natural exposure.

It is a well established biological fact that multiple injections of an antigen afford a higher degree of immunity than single injections. These experiments add further evidence to emphasize the value of repeated injections.

The tests show the degree of protection produced depends on the amount of brain and cord tissue injected, whether it be in a single dose or in multiple doses, together with the length of time between the last dose of vaccine and the injection of the infective dose.

Hemorrhagic Septicemia of Domestic Rabbits

A number of serious ailments[34] of rabbits—snuffles, subcutaneous abscesses, chronic infection of the genital tract, septicemia—are due to infection of the *Pasteurella cuniculioida* (*Bac. lepisepticum*), an organism universally distributed and present in most herds of rabbits. If unapposed, 70% of the animals in rabbitries into which it is introduced, will contract some form of the disease. The chronic

[34] By F. D. McKenney, Associate Veterinarian, J. E. Shillinger, Senior Veterinarian, Section of Disease Control, Division of Wildlife Research, Washington, D. C.

rhinitis is the type most common, followed in order of frequency by boils, the septicemic type and genital infection.

The characteristics of the nasal type is chronicity, sneezing and in time a denuding of the nose; of the abscess type are swellings from the size of a hazlenut to the size of a baseball, containing a thick creamy pus, and usually appearing first under the jaw, later in any part of the subcutem and rarely internally; of the acute septicemic type are sudden death or dull eyes, rough coat, inappetence, shallow breathing and death from pneumonia in 24 to 36 hours; of the genital type, are sterility and a discharge from the vagina or urethra.

Methods of prevention and control include good nutrition, good sanitation, isolation of the sick and a 15-day quarantine of all animals added to the herd. Vaccines raise the resistance of animals, but not sufficiently to control the disease unaided. Abscesses should be opened before they break and disinfected to prevent the spread of infection.

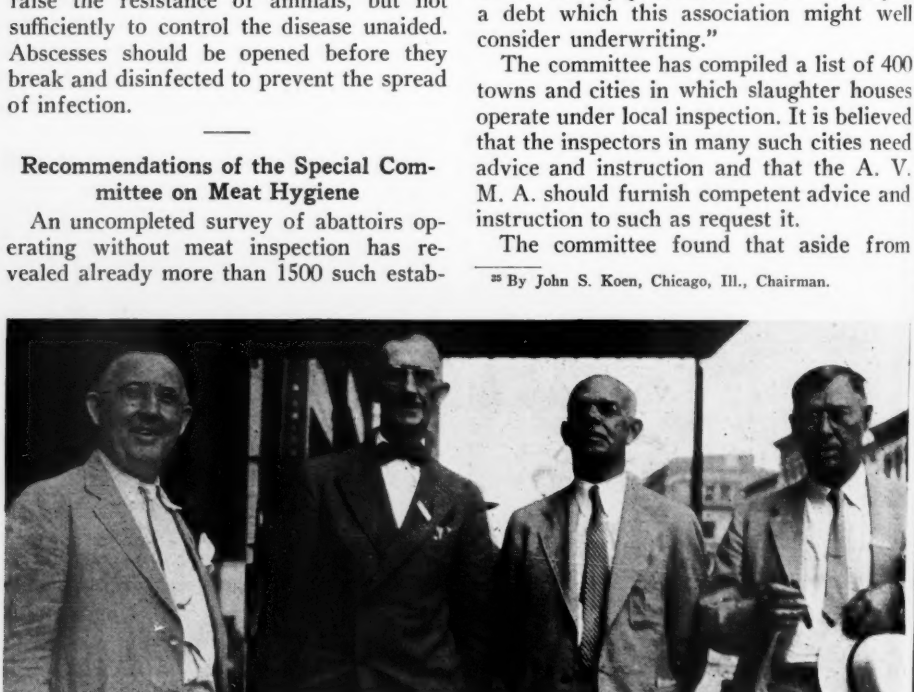
Recommendations of the Special Committee on Meat Hygiene

An uncompleted survey of abattoirs operating without meat inspection has revealed already more than 1500 such establishments.[35] At the most, not more than two-thirds of the animals slaughtered for meat in the United States are slaughtered at plants having Federal inspection, yet at these 300,000 carcasses are condemned annually for disease or other conditions rendering them unfit for food. It follows that in excess of 150,000 similar carcasses must reach the uninspected plants and enter the channels of retail trade; in fact, a greater number than this since "the cold fact is that the tendency of a strict inspection is to cause diseased animals to be sent to slaughter houses having no inspection. This obviously enhances the menace from uninspected meats. An uninspected supply of meat in the channels of trade is a potential liability in the nation's business. On the premise that meat inspection is clearly within the scope of veterinary science, the elimination of this liability is a debt which the veterinary profession owes to society—a debt which this association might well consider underwriting."

The committee has compiled a list of 400 towns and cities in which slaughter houses operate under local inspection. It is believed that the inspectors in many such cities need advice and instruction and that the A. V. M. A. should furnish competent advice and instruction to such as request it.

The committee found that aside from

[35] By John S. Koen, Chicago, Ill., Chairman.

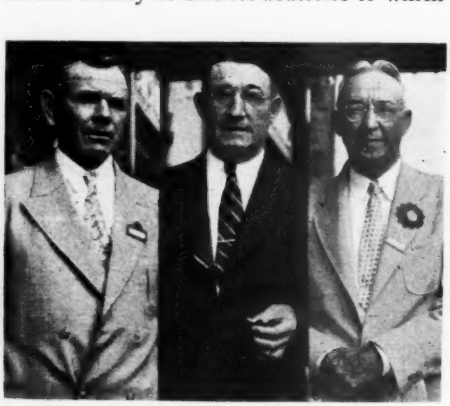


John Stratton Koen, Chicago, B.A.I.; John Leonard Axby, Indianapolis, State Veterinarian and famed Orator from the Banks of the Wabash, Charles E. Salsbery, Kansas City, Jensen-Salsbery Laboratories and L. J. Allen, Oklahoma City, B.A.I.

those animals slaughtered under state supervision in California, and a small percentage that comes under efficient municipal inspection in various cities, there are more than 30 million animals slaughtered annually without inspection of any kind.

"Any system of meat inspection that is inaugurated to supplement Federal inspection should be as nearly like the Federal system as local conditions will permit. Uniformity of inspection systems is essential if they are to be efficient. There is a greater possibility for uniform inspection under state supervision than can be secured by a multiplicity of ordinances by the many cities within a state. Further cooperation between state systems and the Federal system can be secured more readily than between many municipalities and political interference would be less likely under a state system than under city inspection. City inspection should be encouraged to become more efficient, but the best method to attain uniform and efficient meat inspection as a supplement to Federal inspection is by the adoption of state systems of supervision.

"Several million animals are slaughtered annually by owners on their own premises, both for sale and for their own consumption. There are thousands of butchers in small country towns who sell 'home killed' meats. County or district abattoirs to which these animals could be brought for slaughter under state supervision would meet these conditions in a practical manner."



S. A. Watters, Oklahoma City, B.A.I.; Reuben Hilty, Practitioner, Toledo, O., and Nelson Slater Mayo, Highland Park, Ill., chairman, Committee on Education.

Report of the Committee on Education

The report of this committee[36] and the result can be summarized in six words: Schools again classified; adoption again postponed.

It will be recalled that at the Atlanta meeting of the A. V. M. A., in 1932, the association instructed its Committee on Education to classify the veterinary colleges. Yearly since, the committee has presented a classification and as frequently the House of Representatives has postponed for a year acceptance of the classification.

For the current year the applicants for admission to the ten recognized veterinary colleges in North America numbered 2500; due to the present policy of limiting the number of students accepted, only 500 were admitted to the schools (i. e., to first year).

The argument against a rigid classification of veterinary colleges, according to their physical equipment, faculties and capacity to instruct veterinary students, was stated by Dean Newsom of the Colorado school, as follows:

There are certain schools regional in character and small in resources that can never hope to compete with some of the larger institutions such as Cornell and Iowa. They are, however, rendering a service to their regions and to the veterinary profession and should be encouraged. To put them under the same requirements as the larger institutions would be to place on them an impossible handicap and would be unjust. They should be encouraged to hold down their enrollment commensurate with their facilities and if they do this, they can give just as satisfactory veterinary instruction as the larger schools.

I recommend therefore that specifications be set up that would give them the same opportunity to continue as the better supported colleges. I believe that this could be done by taking 100 students as the basis. Suppose that the committee would say a faculty of 12 or 15 is sufficient for this

[36] By N. S. Mayo, Chairman, Highland Park, Ill.

number and that for each additional 25 men an additional faculty member is required. This would then mean that for 200 students 16 or 19 men as the case may be would be required. Other facilities such as buildings and equipment could be worked out on a similar basis.

Once these specifications are adopted not one but two or three members of the Committee on Education should visit the schools, make a detailed and thorough inspection, consult with the president and the Board of Control, if possible, and then make a detailed report in writing as to the needs of the institution. A reasonable time should then be given for the board to make the recommended adjustments even to presenting the matter to the Legislature, if found necessary. Following this a classification could be presented that in my opinion would be fair to all concerned and would be received with favor by the A.V. M.A.

Banquet

The attendance at the alumni banquets and at the general banquet was greater than ever before, the attendance at the latter being about 625. The principal address at the general banquet was made by Dr. Albert Edward Wiggam of New York, the subject "Who Shall Inherit America—The Strong or The Weak—The Intelligent or The Stupid."

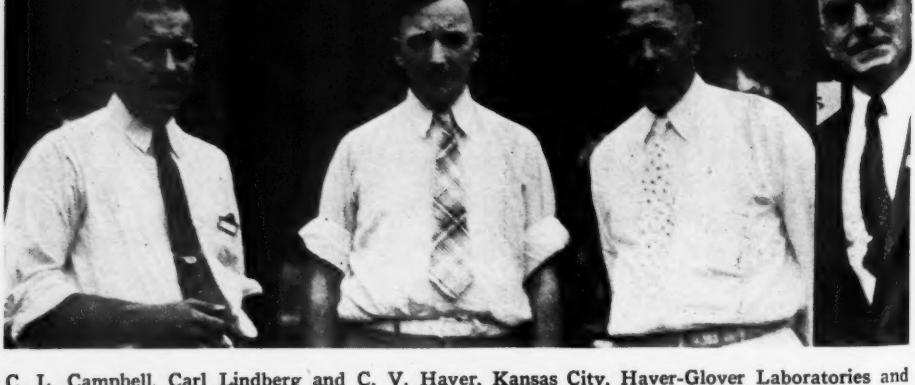
From a study of birth statistics, Doctor Wiggam concludes that the intelligent, the educated and classes above average ability in the United States are dying out, because of their failure to reproduce themselves; while the illiterate, the unskilled and the stupid are supplanting the former classes in the population of the country.

He finds that by 1945 we shall begin to liquidate the brains in this country and that the liquidation will be fairly well along by 1960, by which time the population of the country will begin to decrease and in time will be unable to maintain the standard of civilization developed for it by the abler section of the population and incapable of self government.

Report of the Secretary

With the completion of the applications for membership on file up to the time of the meeting, the total membership will exceed 4,300, a net gain of over 500 members for the year. Ohio is credited with 107 new members, largely through the efforts of Dr. W. F. Guard, Resident Secretary for Ohio. During the year, 462 former members were reinstated and approximately 300 veterinarians filed applications for membership in the usual way. There were 19 resignations.

There were 106 deaths reported during the year, including active members, former



C. L. Campbell, Carl Lindberg and C. V. Haver, Kansas City, Haver-Glover Laboratories and John Reichel, Glenolden, Pa.; Director Mulford (Sharp and Dohme) Laboratories.

members and two honorary members, the latter being Professor Naoshi Nitta, of Japan, and Sir Arnold Theiler, of England. One Honor Roll member died, Dr. George H. Berns, of Brooklyn, N. Y. Among the 50 active members who died were three past presidents of the A. V. M. A., Drs. W. H. Welch, T. E. Munce and C. H. Stange.

The report commented on the unusually large number of changes of address of veterinarians during the past few years, largely the result of hundreds of veterinarians being temporarily employed on government projects in different parts of the country and transferred from one point to another at rather frequent intervals. During the first six months of 1936, there were 443 changes of address reported by members of the A. V. M. A.

The year was a notable one from the standpoint of the number of meetings attended by officers of the A. V. M. A. and members of the Executive Board. President Flynn attended 27 meetings in 19 states.

Secretary Hoskins reported that, on December 1, 1935, ten years of experience with liability insurance for veterinarians had been completed, and according to a report made by the U. S. Fidelity and Guaranty Company, one out of every ten or eleven men insured presented a claim each year. On this basis, it appears that a veterinarian may expect to have a claim made against him about once every ten years. This compares with figures compiled on automobile drivers country-wide on a national basis, who have about one accident every seven years.

The balance sheet covering the financial operations of the JOURNAL, for the year ended June 30, 1936, showed the largest profit for any year since the JOURNAL has been under the present management. No small part of this improvement is traceable to the pick-up in receipts in the form of dues. The JOURNAL income from this source during the year covered by this report has been exceeded in only one year (1928-29), as far as records are available.

With the addition of the Idaho Veterinary Medical Association, all 48 state associations are now affiliated with the A. V. M. A.

G. W. Rawson, Detroit, Parke, Davis & Co. and E. C. Schubel, Practitioner, Blissfield, Mich.

Commercial Exhibits

Among the veterinary supply houses having exhibits at the meeting were:

Wilson & Company, The Haver-Glover Laboratories, Allied Laboratories, Inc., Abbott Laboratories, Inc., The Corn States Serum Company, Ashe Lockhart, Inc., Norden Laboratories, Lederle Laboratories, Inc., Fort Dodge Laboratories, Inc., Swift & Company, R. J. Strasenburgh Company, Jensen-Salsbery Laboratories, Inc.

Election of Officers

There was no contest in the election, hence no balloting and all the new officers were elected by acclamation. Col. R. J. Foster, director of the Army Veterinary Corps, was elected president for 1936-37 and O. V. Brumley, Dean of the College of Veterinary Medicine, Ohio State University, was chosen president-elect to be president for 1937-38, this being the first meeting at which a president was chosen a year in advance of the time he is to take office. Amendments to the Constitution and by-laws providing for this arrangement were ratified at the Oklahoma City meeting last year.

The vice presidents selected were: 1st, B. A. Beach, Madison, Wisc.; 2nd, J. A. Campbell, Toronto; 3rd, G. A. Dick, Philadelphia; 4th, Wm. L. Gates, Clarksdale,

Miss., and 5th, D. H. Udall, Ithaca, N. Y.

M. Jacob, Knoxville, Tenn., was reëlected treasurer for the 20th consecutive term and H. Preston Hoskins, Chicago, was reëmployed secretary-editor for his 15th year in that capacity.

Publicity

For the first time, or at least for the first time in recent years, an annual meeting of the A.V.M.A. was reported in a general magazine. The issue of *Time* for August 24th carried a report of the meeting occupying more than a page. Doctor Schalk's discussion of the rumen was abstracted in *Science News Letter*. The Associated Press distributed news of the election of officers, which was carried in many metropolitan newspapers.

Columbus papers ran news stories of the convention each day during its sessions, and the following editorial appeared in one of the Columbus papers:

The Veterinarians

COLUMBUS is glad to be host to the American Veterinary Medical Association in its annual convention. The mere fact that this is its seventy-third yearly meeting shows that it has had a long line of progress and an important place in the professions that have to do with the curative and preventive arts.

Furthermore, while the patients of these doctors are animals and not humans, theirs, nevertheless, is a glorious calling. Man depends on animals for food and service, and sometimes for the joy of the hunt, but there has grown up in all civilized nations the notion that dogs, cats, horses, cattle and other animals must be treated kindly and when they suffer or ail the doctor should be called.

Naturally, the man who has a valuable horse or cow or dog that is in trouble wants the services of a veterinarian because of the fear of pecuniary loss, but there is a higher motive than that which impels the owner to call in the doctor, and that is that there exists between owner and animal a sort of feeling that amounts almost, if not quite, to real love.

The discoveries of the eminent Louis Pasteur had the effect of greatly reducing the hazards of animal life and production, and gave to veterinarians a greatly increased store of knowledge. To aid the man who had become schooled and experienced in the science of veterinary medicine against the quacks and the inexperienced, states passed laws setting up requirements and colleges fixed high curricular standards, so that today the veterinarian ranks high in the field of medicine, surgery, sanitation and public health.

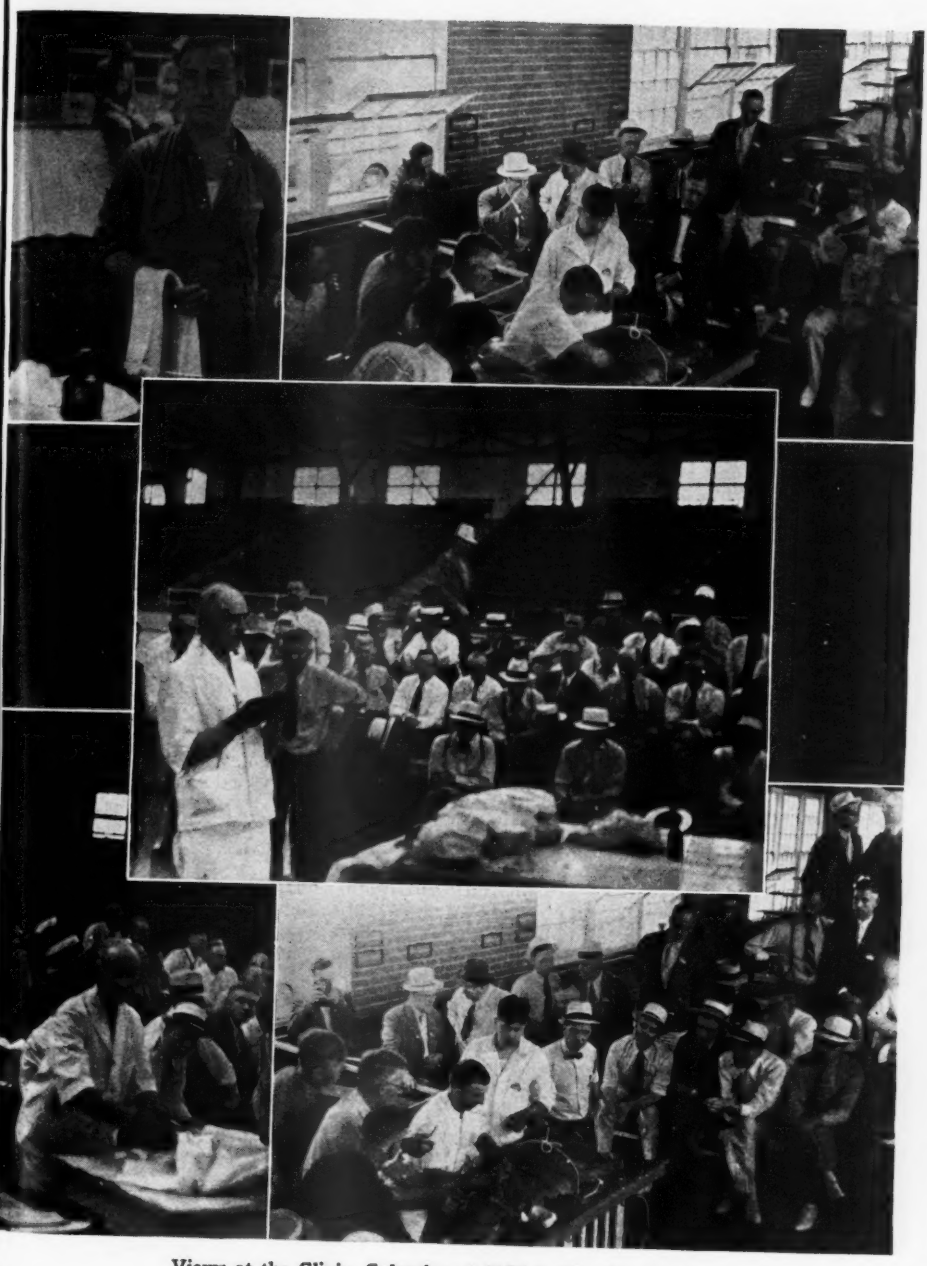
Left: Norman J. Pyle, and Right: Clifford D. Carpenter, Pearl River, N. Y., Lederle Laboratories.

Left: Alex. Eames Wight, Washington, D. C., Chief Tuberculosis Eradication Division, B.A.I. Right: John F. McKenna, Practitioner, Los Angeles, Calif.

Left: I. E. Newsom, Fort Collins, Colo., Dean Division of Veterinary Medicine, Colorado Agricultural College. Right: E. B. Dibbell, Practitioner, Baltimore, Md.

Left: S. E. Hershey, Practitioner, Charleston, W. Va. Right: E. T. Hallman, East Lansing, Mich., Division of Veterinary Medicine, Michigan State College.

Left: George A. Dick, Philadelphia, Dean, School of Veterinary Medicine, University of Pennsylvania. Right: Albert T. Kinsley, Kansas City, Kinsley Laboratories.



Views at the Clinic, Columbus A.V.M.A. Meeting 1936.

MANY DOGS ARE

ROBBED

AT MEAL TIME

• Many fond owners rob their pets of NOURISHMENT by giving them foods that fill but do not really FEED the animal body. And surprisingly enough, many of these foods have an advertised high chemical analysis of proteins, carbohydrates, minerals, etc.

But licensed, graduate veterinarians know that the chemical analysis of a canned dog food is, in itself, no guarantee of purity or nourishment. Chemical analysis and BIOLOGIC VALUE are two different things. Chemical analysis in a dog food means nothing until that food has proved its BIOLOGIC VALUE.

Ken-L-Ration's chemical analysis is backed up by PROVED BIOLOGIC VALUE. Generations after generations of dogs prove the *nourishing qualities*—the high Biologic value of Ken-L-Ration. The Biologic value of Ken-L-Ration is based on living history—biological facts—positive truth. Write for illustrated booklet giving new facts about dog food.

CHAPPEL BROS. INC.

503 Peoples Ave. Rockford, Ill.

Specific Against . . .

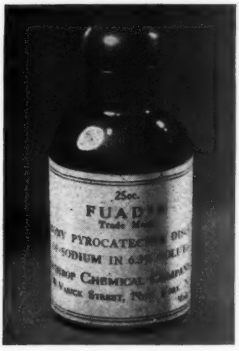
HEARTWORM INFESTATION of Dogs

(*Dicrofilaria Immitis*)

FUADIN

Reg. U. S. Pat. Off.
Brand of Stibophen

EFFECTIVE new antimony compound with a scientific and clinical background. Best employed intramuscularly. Does not cause sloughing or abscess formation. Also used intravenously with excellent results, particularly in large dogs.



Supplied in convenient diaphragm stoppered bottles containing 25 cc. of Fuadin Solution

Informative literature and prices on request.

WINTHROP CHEMICAL COMPANY, INC.
170 VARICK STREET NEW YORK CITY

Factories:
Rensselaer, N. Y.—Windsor, Ont.

ALLANSOL

Solution and Jelly . . .

The rapid cell proliferant and healing stimulant. Useful in treating cases of Osteomylitis and other deep seated wounds. Allansol results in more rapid healing. Causes new cell growth at the site of application only.

The **jelly** should be used where the **solution** cannot be used to advantage. The jelly is supplied in tubes with elongated tip.

R. J. STRASENBURGH CO.
Rochester, N. Y.
Pharmaceutical Chemists Since 1886

WEST VIRGINIA MEETING

The next annual meeting of the West Virginia Veterinary Medical Association will be held in Charleston Oct. 27 and 28, 1936. There will be three sessions, morning, afternoon and evening on the 27th and a clinic on the 28th.—*J. H. Rietz, Secretary.*

NEXT WORLD'S POULTRY CONGRESS IN U. S.

The seventh World's Poultry Congress will be held in the United States during August, 1939, as a result of action taken by officials of the sixth Poultry Congress recently held at Leipzig, Germany. The dates of the next congress and the host city are to be announced later by the Poultry Science Association which is to have charge of preliminary arrangements.

This announcement is made by Dr. John R. Mohler, Chief of the Bureau of Animal Industry, United States Department of Agriculture, who, as chairman of the official delegation to the Poultry Congress at Leipzig, extended the invitation on behalf of the U. S. Government to meet in this country in 1939.

Forty-two countries participated in the congress at Leipzig and 21 had exhibits. The exhibition of live birds was more extensive than at any previous congress. It was supplemented by a large display of rabbits raised for the production of both meat and fur.

VACCINATE THE CALVES
to build immune herds

BOVINE ABORTION VACCINE *(LIVING CULTURE)*

—Norden Certified Brand—

Prepared from U. S. B. A. I. Cultures (strain No. 19), according to method of Cotton and Buck.

A low-virulent, one-injection treatment

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Tested and found uncontaminated and viable.

1. Establishes a young highly resistant herd.
2. Reduces number of abortions in herds due to Br. Abortus infection.
3. Lessens frequency of sterility due to Br. Abortus infection.
4. Largely controls scours in calves by establishing resistance to debilitating factors.

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FOR CALVES, VIRGIN HEIFERS, OR OPEN COWS IN INFECTED HERDS

Prices

BVA. 20cc.....$0.40; BVC. 240cc.....$4.80

NORDEN LABORATORIES
LINCOLN NEBRASKA

FISTONE

Fistone has been serving veterinarians the world over for more than a quarter of a century.

85% of the cases of Fistulous Withers, Poll Evil, Quittor, and diseases of kindred origin in horses and cattle, respond to the Fistone treatment without the use of surgery, bacterins, or any external treatment whatever.

The Fistone and Appliance Company
College Corner, Ohio.
Trial Order—One doz. boxes (once only)...$ 8.00
Regular Price—One doz. boxes..... 10.00
One-half doz. boxes..... 5.00
Dr. .....
Address .....

EASTERN IOWA MEETING

The 23rd Annual Meeting of the Eastern Iowa Veterinary Association will be held in Cedar Rapids Tuesday and Wednesday, October 21 and 22, 1936.

* * * *

The Pure Milk Association, marketing agency for producers in the Chicago milk shed, awarded the prize in the "Neat Farm Contest" in the Second District to the farm near Roscoe, Ill., owned by Dr. D. S. Jaffray of Chicago and operated by F. L. Kitlinger. The *Beloit* (Wisc.) *Daily News* in a detailed account of the farm and methods of operation including half-tone illustrations of the buildings and of Doctor Jaffray, said in part:

It's easy to agree with the judges of The Pure Milk association neat Farm contest, who picked the Dr. David Jaffray farm east of Roscoe as the neatest in District Two, once you see its double-set of glistening white buildings, the clean stretches of woven-wire fences, the smoothly trimmed lawns about the house and grounds, and the sleek, fat cattle.

The farm is really a country show-place, and it must be a pleasure for any cow, pig or horse to live on the Jaffray farm. The stables, yards, pens and sheds are spotlessly clean, and one leaves the farm with the feeling that a gold medal isn't quite good enough for the place.

As to DOG FOOD...

YOU know what's needed WE aim to furnish it . . .

OF all the good things to the credit of Gaines Food, its acceptance by so many of America's veterinarians is the most significant.

If there is one thing, in earning professional commendation, that Gaines has always insisted on, it is quality—and that means high grade ingredients and absolute cleanliness and purity. Every ingredient bought on a **biological** standard — that's one reason why Gaines is always **safe.**

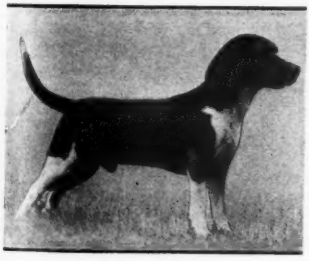
Yes, it does cost more to make. But that doesn't keep it from being popularly priced—and it does assure food value that actually reduces feeding expense.

There's no guess about Gaines Food. Its promotion of sound health, growth, and reproduction has been biologically proved through four successive dog generations. Gaines furnishes all the essential vitamins, (A, B, D, G, E), nourishment for every phase of a dog's development, digestion aids to insure nutritional results (enzymatic material).

Many veterinarians are finding their feeding prescriptions properly filled, and **easily followed out,** by Gaines Food—and that the improvement their skillful care has started can be reliably continued.

You owe yourself a trial of Gaines Food — it is sold on a money-back guarantee.

FREE **Send a Post Card for Professional Samples. Also please note this: to ONE in each community, we'd like to send details of our Veterinary-Dealer proposition.**



Duplex Short Story—AKC—A-2279

"My dogs and pups look and feel better on Gaines' than on other feeds I have used," says M. J. Farabaugh of Carrolltown, Pa., to whom this splendid Beagle belongs. "Their coats are bright and glossy and there is no tendency to rickets."

GAINES *DOG* FOOD

GAINES FOOD CO. Box H-7, Sherburne, N. Y.

Send free sample feeding of:

☐ GAINES MEAT FOOD MEAL COOKED — THE GRANULAR FORM

I enclose $1 bill for 10-lb. bagful, prepaid:

☐ GAINES KRUNCHON — THE PELLET FORM

Name .....

Address .....

QUALITY *counts in* CANINE NUTRITION

TI-O-GA Dog and Puppy Foods formulae are based on more than six years of scientific study and biological tests conducted by a recognized canine authority. The success of these efforts is attested by the fact that six successive generations of bloodhounds have been whelped and sustained in robust health exclusively on TI-O-GA. We believe *no other dog food can make a similar claim.*

But the name TI-O-GA stands for even more than six years of intensive and successful experimentation. For back of this food stands 28 years of practical experience in the selection of food ingredients for animal nutrition. As specialists of long experience in this field we do not confine ourselves to mere adherence to formulae but select with the utmost care only those ingredients which conform to the highest standards of worth and quality.

For this reason you may be sure that TI-O-GA is worthy of your professional endorsement. If interested in dispensing TI-O-GA, write for details.

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Division of* TIOGA MILLS, *Inc.
DEPT. M-61, WAVERLY, NEW YORK

HARLTON'S LIQUID BLISTER *and* FREE BOOKLET

Easy to apply. Saturate on with hand—no rubbing. Doesn't burn, set skin "on fire," kill hair, or scar. Head let down in few hours. No rest necessary in many cases. Vary application to produce just degree of counter-irritation needed. Diluted with oil, makes any strength liniment desired. FREE SAMPLE—a $1.00 bottle sent free postpaid upon request if you have never had one . . . . treats several cases. It doesn't pay to be without this convenient, effective and economical preparation; write for sample or mail order today. 4-oz. size, $1.00; 16-oz., $3.00.

Detroit Veterinary Supply Co.
460 West Jefferson Avenue, Detroit, Michigan
Canadian Branch, 139 Sandwich St., Windsor, Ontario

SOUTHERN VETERINARIANS TO MEET IN GREAT SMOKIES

The next annual meeting of the Southern State Veterinary Medical Society will be held at Asheville, N. C., Oct. 21, 22, 23, 1936. An excellent literary program and clinic have been planned. The clinic will be second day of the meeting. —*M. R. Blackstock, Spartanburg, S. C., Secy.-Treas.*

On August 19th a public reception was held in the Christian Church at Kensington, Kansas, in honor of the 50th Wedding Anniversary of Dr. and Mrs. W. N. Hobbs. Dr. Hobbs' health has not been good for the last nine years but he and Mrs. Hobbs were able to enjoy the honor tendered them by the people of the church and community on this happy occasion.

* * * *

Haver-Glover Catalog.—The fifth Manual of Therapeutics and Catalog of the Haver-Glover Laboratories has been distributed recently. All of the H-G specialties are described in detail as to action and directions for use. It is cloth bound, indexed for convenient reference, contains 400 pages and more than 3,000 illustrations. It includes a number of tables and a dictionary of diseases, with suggestions for treatment. All discussions are strictly up to date.

Lederle VETERINARY PRODUCTS · *Biologicals*

• CATTLE •

CARBOZOO
(A New Anthrax Vaccine)

For immunization of cattle, horses, sheep, goats, and other animals against anthrax infection. For animals with anthrax, use anti-anthrax serum.
Packages: 5 cc. vials (20 large or 40 small animals); 10 cc. vials (40 large or 80 small animals).
The older simultaneous and spore vaccines are available.

ABORTION TEST ANTIGEN

For the rapid agglutination test.
Package: 20 cc. vial (200 tests).
Illuminating boxes available.

ABORTION VACCINE (Bovine)
(For Prevention Only)

Packages: 1 imm., 20 cc. vial; 5 imms., 100 cc. vial.

ANTI-ANTHRAX SERUM
(Curative)

Packages: 100 and 500 cc. vial, of equine or bovine origin.

BLACKLEG AGGRESSIN

Packages: 25, 50, 100 and 250 cc. vials.

BLACKLEG VACCINE
(Whole Culture)

Packages: 25, 50, 100 and 250 cc.

ANTI-BLACKLEG SERUM
(Curative)

Package: 100 cc. vial.

HEMORRHAGIC SEPTICEMIA AGGRESSIN

Packages: 25, 50, 100 and 250 cc. vials.

HEMORRHAGIC SEPTICEMIA VACCINE (Whole Culture)

A chemically killed undiluted whole culture.
Packages: 50 and 250 cc. vials.

ANTI-HEMORRHAGIC SEPTICEMIA SERUM

Packages: 100 and 500 cc. vials.

KERATITIS MIXED VACCINE

For Keratitis (pink eye).
Packages: 50 and 250 cc. vials.

MASTITIS MIXED VACCINE
(Bovine) (Whole Culture)

For Mastitis and Garget.
Packages: 50 and 250 cc. vials.

MIXED BACTERIAL VACCINE
(Bovine) (Whole Culture)

For infectious Metritis and retained placenta.
Package: 50 cc. vial.

WHITE SCOURS VACCINE
(Whole Culture)

Package: 50 cc. vial.

WHITE SCOURS ANTI-SERUM

For White Scours in calves and navel-ill in foals.
Packages: 10, 30 and 100 cc. vials.

• HORSES •

ABORTION VACCINE (Equine)
(For Prevention Only)

Packages: 10 and 50 cc. vials.

ANTI-EQUINE ENCEPHALOMYELITIS SERUM (Polyvalent)

Dosage: For *prophylaxis*—50 to 100 cc. For *treatment*—100 to 200 cc., preferably intravenously. Repeat in 8 to 12 hours.
Packages: 100 and 250 cc. vials.

EQUINE ENCEPHALOMYELITIS VACCINE
(Contains Eastern and Western Strains)

A tissue Vaccine for prevention.
Packages: 1 immunization 2-25 cc. vials.

EQUINE INFLUENZA VACCINE
(Whole Culture)

Packages: 50 and 250 cc. vials.

EQUINE ANTI-INFLUENZA SERUM

Package: 50 cc. vial.

MALLEIN (Subcutaneous)
(Intra-Palpebral) (Ophthalmic)

For the diagnosis of Glanders in horses.

MIXED BACTERIAL VACCINE
(Equine) (Whole Culture)

For mixed infections in horses.
Package: 50 cc. vial.

TETANUS ANTITOXIN

Packages: 1500, 5000 and 10,000 units in syringes or vials; 20,000 units in vials.

TETANUS TOXOID
(With Alum precipitate)

For lasting protection against tetanus.
Packages: 1 dose (10 cc.); 5 doses (50 cc.).

• HOGS •

ANTI-HOG CHOLERA SERUM
(Clear and Concentrated)

When employed on susceptible hogs with the proper dosage of Hog Cholera Virus it establishes immunity.
Dosage: According to directions on package.
Packages: 100, 250 and 500 cc.

HOG CHOLERA VIRUS

Active virus to be used with serum in immunizing hogs.
Packages: 15, 30, 60 and 125 cc. vials.

MIXED BACTERIAL VACCINE
(Swine) (Whole Culture)

For mixed infections in swine.
Packages: 50 cc. and 250 cc. vial.

SWINE ERYSIPELAS SERUM

Effective in preventing losses from Swine Erysipelas.
Packages: 50, 100, 250 and 500 cc. vials.

• SMALL ANIMALS •

CANINE DISTEMPER VACCINE
Laidlaw-Dunkin Method

For immunizing dogs against Distemper. (One or two doses of 5 cc.).

To ensure life immunity virus should be given intradermally 14 to 21 days after the administration of vaccine.
Packages: 1—5 cc. syringe and 2—5 cc. syringes.

CANINE-DISTEMPER VIRUS
Laidlaw-Dunkin Method

For completing the immunization against Canine Distemper. Use only after vaccine (from 14 to 21 days).
Package: 1 dose (10 mg. virus in syringe with diluent).

ANTI-CANINE DISTEMPER SERUM

Prepared by hyperimmunizing dogs with Canine Distemper Virus (Laidlaw-Dunkin), and organisms associated with the complications of distemper.
For Passive Immunity (10 to 20 days): Use 10–20 cc.
For treatment: 2 cc. per pound of body weight. Repeat in from 6–12 hours till symptoms are controlled.
Packages: **10,** 30, 50 and 100 cc. vials.

ANTI-CANINE MIXED INFECTION SERUM

For the various mixed infections in dogs and the secondary infections following distemper.
Do not confuse with Anti-Canine Distemper Serum.
Package: 50 cc. vial.

CANINE RABIES VACCINE
(One Injection Method)

Immunizes for approximately one year. Repeat annually.
Both phenol- and chloroform-killed vaccine available.
Packages: 5 cc. vial, 6—5 cc. vials, 50 cc. vial (10 doses).

FELINE MIXED VACCINE
(Killed Organisms)

For the prevention and treatment of distemper and infectious enteritis complications in cats.
Package: 5 cc. vial.

MIXED BACTERIAL VACCINE
(Canine)

For the treatment of mixed infections in dogs and the complications of distemper.
Package: 20 cc. vial.

RABIES VACCINE—6 Dose
(Dilution Method of Hogyes)

For the treatment of animals exposed to rabies.
Package: 6 vials. When ordering, specify animal to be treated.

STAPHYLOCOCCUS TOXOID

For treating staphylococcic infections such as Pustular Acne, secondary skin infections of mange and persistent abscesses and carbuncles.
Package: 10 cc. vial.

PHARMACEUTICALS

Ask for Listing.

Fun . . . and good eating . . .

Milk-Bone can't help being good for dogs! A concentrated food made from **MILK-BONE** good, clean beef meat, cereals and food minerals in just the proportions that are right for dogs. Milk-Bone is made bone-shaped to invite thorough chewing, and the same kind of playful gnawing that makes a bone such fun. *That* helps keep your dog's teeth, gums and jaws in top form. Get Milk-Bone from your dealer today. Begin with the 10c Junior size if you like, but begin feeding Milk-Bone today!

FREE SAMPLE Milk-Bone Bakery, National Biscuit Company, Dept. L-1036, 449 West 14th Street, New York.
Please mail me FREE Milk-Bone for my dog. Also free folder, "How to care for and feed your dog." (Print name plainly. Paste coupon on a penny post-card, if you wish.)
Name .....
Address .....
City and State .....

Decidedly beneficial to dogs with DISTEMPER

"Dejem" Reg. U. S. Pat. Off.

Controls the severe sickness following inoculations.

"Dejem" 16 oz. size, 1 bot.....$ 2.75
3 bot. .....$6.75, 6 bot.....$12.00

Mangan & Co., Laboratories
294-298 E. 161st St. New York

Jen-Sal Catalog.—The eighth edition of the catalog of the Jensen-Salsbery Laboratories, Inc., has come from the press recently.

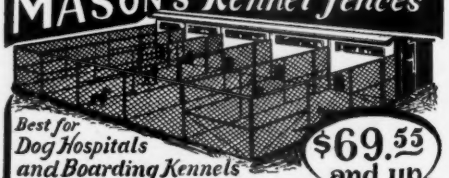
In keeping with the recent custom of the larger veterinary supply houses, the catalog constitutes not only a descriptive price list of the complete line of biological and pharmaceutical products, surgical instruments and books supplied by Jensen-Salsbery, but also a limited treatise on veterinary pharmacology and therapeutics. Hundreds of illustrations are included, illustrating not only instruments and packages, biological and pharmaceutical products, but also in many instances methods of using them and cases in which they are indicated, together with keys for the identification of parasite eggs, etc.

TREATMENT FOR SUNSTROKE

When the first evidences of sunstroke in a horse become evident, the animal should be stopped, taken out of the harness and placed in the shade where very cold water should be applied to the head and along the spine and showered over the body. Ice packs or ice water should be applied until the horse's temperature is reduced to 103° F. or less, and the animal should be given ample time to recover before being put back to work.—*Missouri Farm Bureau News.*

What about calling an expert to handle so serious an ailment as sunstroke in horses or if the farmer must be coached to be his own doctor, why not give him uptodate advice on sunstroke including the technique of intravenous injection.

MASON'S *Kennel Fences*



Best for Dog Hospitals and Boarding Kennels

$69.55 and up

Mason's are Real Kennel Fences—Strong, Good Looking and sold under a Money Back Guarantee to hold the largest and strongest dogs. Used and approved by best Kennels everywhere.

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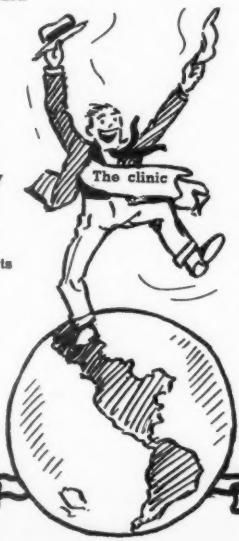
taken into the field get the right perspective of medicine as an art, a science and a business,

because the practice of medicine is too complex to unravel in the office and laboratory without the discipline of clinical tests and practical experience.

But only the counsel of the college-trained man aids in the climb of clinical medicine to the "Top of the World." Catering to others lowers the status of clinical work.

Practitioners may, therefore, look askance at sources of supply rudely ignoring the practice of veterinary medicine as a refined art.

A survey of your prospects



will bring home the reward

Climb to the top with those who keep faith in you and your art by word, spirit and behavior

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An Efficient
Bactericidal Agent
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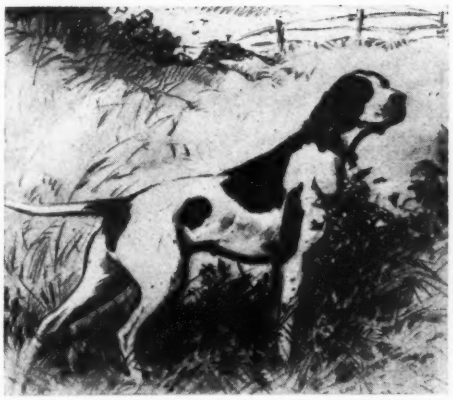

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Enteric and pulmonary disorders may occur in swine that have not been vaccinated with anti-hog cholera serum, in cholera immune swine, and as complications of cholera.

Best results from cholera vaccination are obtained only when healthy herds are treated. Swine sick of disease other than cholera should be properly treated prior to the use of serum and virus.

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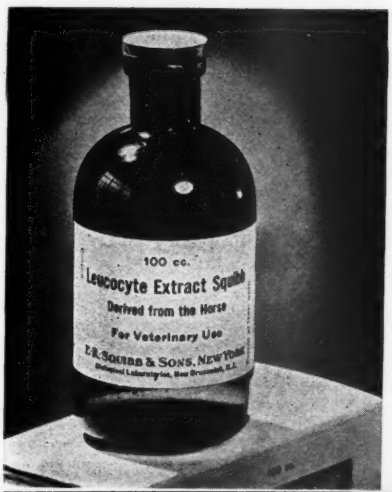

In strangles in horses, leucocyte extract will be found effective in shortening the course of the disease. Prompt treatment will frequently abort the disease before the affected glands suppurate and make feeding difficult.

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SIXTY-FIFTH ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

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The names of the speakers listed on these programs are familiar to everyone as public health leaders. The annual meeting of the American Public Health Association has been known for years as the place to hear the last word on disease prevention and control and health promotion from experts.

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